COMPUTERWORLD



MAINFRAMERS transition

on male from are like GTE's tute Wilson are disching old skille and moving into the scary world of Unix. C and objects. They say the change has been frustrating but rewarding For their stories. tempring to men

GM seeks consistency

Goal is to standardize desktons, tools across enterprise

D. Pille Booker

General Motors Corp. has quietly numbed the redal to the metal empushed the pedia to the second in person the interest and the life history

The malis to change the way GM hander information on the deskton in the workstroup and across the enterprise This in turn "lave the enterprise. I has, in turn, my

tation of a common business communication strategy across Gen and Motors" said Donald G Hedren, director of desktops and deployment at GM and manager of

the nortade program. to undersome program.

He refers to the project as the "deproliferasine" of CM's office technologies. The Detroit automaker's three-year plan.

known internally as the Consistent Office Environment, or COE, calls for replacing a bodgeposite of desiston models, network operating



soon to to being piss. Buto C Moffices

most tools with a shorter and hence more manageable list of menter and technology platforms "Fight years ago, GM moved to make specific business units prof-

it centers," said Henry Octi. who spent several years at GM and is now a consultant at CSC Index. Inc. in Cambradge, Mass. The result of this structure. Osti added. was "tremendous duplication of canacity" - a situation that cur-Capacity Chief Presuring Officer and Descrident Jack Smith Je is

working to redress. GM subsidiary Electronic Data Systems Corp. is coordinating the project for GM North p. to coordinate

COE is a landmark, too, for the few lucky vendoes tarmed by GM/EDS to supply hardware and software components. For example, Lotus GM. page 12

Internetworking advance speeds data transfer rates Country in Ann Arbor Mich H. Stanbon D Flott Je

Symplex Communications Corp. last week unveiled an internetworking technology that amplies LAN switching concepts to the wide area in order to deliver faster

reasonission speeds and lower roots than traditional dedicated and disl-up access services Called Direct Route, the technology is "connection-oriented" and combines Asynchronous Transfer

Mode-like scalable bandwidth with switched digital telecommunications services such as Integrated Ser-



Direct Route makes poinf-to-point connections without an intermediate device such as a bub or bridge. Tonditional "connectionless" methods such as leased-line routers require an intermediate device to store and then forward date.

Stroitleantly faster Speed is the primary benefit of cutting out the middleman. For exam-

ple, transporting a 3M-byte graph ies file could take seven minutes using a leased-line router at 56K hit/sec and twice that time using dial-up connections. With Direct Route, that file could be transmit-

The Direct Route system stated to ship by the end of the second nuarter consists of an access device similar to a router that provides up to four dual-channel ISDN connections for a total bandwidth Data transfer, poor 10

De Joseph Weelitte Ougoing industry shake-use may lead to new horizons for serospace and defense firms, but they signal rough flying for information systems professionals facing lawoffs and sticky integration issues As Martin Marietta Corp. and

Northrop Corp. battled last week for the right to buy Grumman Corp., top IS officials at all three companies were predictably tightlipped But industry analysis said work force reductions were a cer-

"We're keeping at arm's length for the next 30 days," said J. Thomas Kelly, Grumman's director of in-

formation management business planning. This should be interesting," be added. Analysts said last week's annonnement of the proposed \$1,9

0012 6 XC

billion merger of Martin Marietta and Grumman would create the nation's largest aerospace/ ted in 26 seconds, according to

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Defense firm merger may roil IS waters es concern. But Northrep moddied the waters with its own \$2 hillion hid to hav Grumman. As the battle rages, Kelly said Gramman's IS department is pursuing business as usual. "We're still in the process of contralizing

that a sizable work force reduction our financial systems and moving mould be necessary in another corner of the defen them to elient/serve." be said. While a Securities and Fv.

man officials at the Bethpage, N.Y. headquarters privately conceded Defense, page 12

into stock trading surrounding the merger made the companies more

circumspect than usual, Grum-

NCR sites wary of AT&T strategy

By Thomas Hoffman

Analysts once described it as the smoothest merger in corporate history. But in the three years since AT&T acquired NCR Corp., the renoits have been anything but stellar.

Despite the Dayton, Obio, computer n efforts to focus, users have mixed feelings about its performance to date and its apparent strategic direction. in general, users said they are satisfied with the products and have continued to receive strong service and support despite recent downstring efforts at NCR, which was recently renamed AT&T Global informa-Hon Solutions

But users also voiced some skepticism about how the company's restructuring efforts will eventually affect support. For example, the former NCR late last year created more than 500 customer-focused teams of sales and product specialists to work with its ingrest customers

Rased on 26 76% NCP sites Besearch Corp 24% between Feb. 2

and March to

Those changes have drawn the ire of at least one ATAT Global Information Solutions user State Industries, Inc., an Ashland City Tenn. water heater manufacturer that nees four NCR 3400 manufacturing systems. "The impact of

NCR, pape 8

Table of Contents



we never been tougher, more and non-techies are seizing the IS non-techies are seizing the IS e. A new Computerworld survey is that "outsiders" from general as backgrounds new hold almo half of the ton technology posts at large II S husinesses, and many say their ranks will continue to swell.

a Vendors will so public with object hattles fourts on the sidelines during the past four years Page 4

The shipment date for a major NetWires 4 v advance retreats - again. Page 4

a Oracle plans a workgroup-level version of its. Oscalo 7 database Proces

Apple's long-awaited Power Macintosh becomes rine for picking today Page 14 Digital plans to introduce a bulked-un line of

PC servers Page 20 minionet, Microsoft and other vendors offer enterprise management services for multima-

tional corporations. Page 24 Today's wireless networks are not expected to compete effectively with future technologies

such as Celiniar Digital Packet Data. Page 39 COMPUTER INDUSTRY

HynerDesk abandons the object request bro ker market. Page 30

DESKYOP COMPUTING - As the market shifts to color note! will be in short supply through 1994. Page 39

WORKGROUP COMPUTING

a A new version of Lotus' Approach will set as a front-end database for Notes. Page 49

METWORKING aRichard Semerad expects a pen-based

Page 55



LARGE SYSTEMS Encore tries a new entry point for its main-

frame alternative systems, Page 71

APPLICATION DEVELOPMENT a Developing a GUI standard can reduce has-

ales, But it's hard to enforce. Page 75

THE CW GUIDE TO PAID The time may be right for another look at RAID of



ers. Pages 91-99 CARFERE

#Object management could be the next hot

MARKETPLACE

Post ... want some tips on great utilities for neumanmors? Prior 120

COMMENTARY

F

anni Laborts cults for Unix veodors to put their egos in their back pockets. Page 34 Charles Babcock says technology such as Open Day is one key to setting benefits from distributed computing. Page 6

■Jeffrey Kaplan and Ellen Kitzis warn that say ings may be imaginary when users split their

service dollars. Page 35 The beta test system could lend to burn't soft ware. Michael Schrage says. Page 35

s Jean Bozman says don't forget the basics bee moving to distributed computing Proce 67 an Schatt notes that ATM is only one high speed technology users must consider. Page 61

endarPage 89
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itorial/Letters to the editorPage 34
day Stock Ticker Page 125

Correction

The article "Manage my inventory or else" [CW, Jan. 31] incorrectly stated that the inforem III inventory replecishment program was developed by Procter & Gamble Co. It was developed by IBM.

Executive Briefing

General Motors races ahead with the biggest IS infrastructure upgrade in its history, a three-yearnian known internally as the Consistent Office Environment or COE GM will replace a jumble of desktop models, network operating systems and application development tools around a short list of vendors and technology platforms. Page 1

throu want to learn - and change - the transition from a mainframe environment to the new world of Univ distributed systems and objects can be rewarding, although nobody said it would be easy for the IS professional. Three mainframers talk about the transition to smaller systems. Page 103

The changing map of the aerospace industry

shows trouble shead for IS professionals as layoffs and systems integration issues are expected from the merger of Martin Marietta and Grumman and cutbacks at Raytheon, Page 1

Pen-based computers are the golden spike for Conrail, which is ryang attribute devices into its host systems and helping train crews stay in touch even while they're rolling down the rails

Page 55 X/Open is undergoing a transition as it strives to boost member ship and push annual revenue past its current \$17 million to most the increasing demands of actting open systems standards for distributed computing. Users are gaining influence as they set priorities for open systems specifications as part of a year-old requirements process. Page 16

The risks of going with an early version of Novell's NetWare 4.x were well worth it for National Semiconductor, which has placed important data and applications within reach of marketing, sales

and support field personnel. Page 57 With vendors such as IBM and EMC knocking heads with comneting RAID offerings in the host-based storage sector, users can pening scalar outerings in the nost-based storage sector, discretical expect lower prices. Page 67. Meanwhile, experts see new reasons

for users to explore RAID options. Pages 91-99

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IBM tool kit provides link to OLE

By Melinda-Carol Hailou

IBM will one-up Microsoft Corp. and Digital Equipment Corp. in the object standards battle this week by maveling a tool kit that will caable developers to create applications that support IBM's object model and access data. in applications that sopport Microsoft's Object that the Development of the Corp.

Limania and simple council (see a side).

IBM's SOMobjects for Windows will be announced at Software Development '94 as expected. Already shipping on OS/2 and ATX this new version of the Sestem Object.

expected. Aireasy inapping on USE and AIX, this new version of the System Object Model/Distributed System Object Model (SOM/DSOM) tool kit will enable Windows application developers to take advantage of IBM's object model. More importantly. SOMobjects for Win-

More importantly, SOMobjects for Windows will incorporate the ability for OLE applications to use SOMobjects and interoperate with them, sources said. Bits accomplishes this using a Component Object Model (COM) "emitter," the company

said. COM is Microsoft's object model for OLE. The COM emitter, created internally at IBM, allows applications written with the COM interface to access SOMobjects and vice versa; sources said. "It will work the same way imaguage bindings work to let different languages use SOMobjects on one source said.

Micronott said it will leave the job of linking OLE to the Common Object Request Broker-Architecture (COR-BA) primarily to other vendors such as Digital Microsoft said it is in a position to do this because OLE is abliuitous in the marketplace, with around 130 independent of the properties of the properties of the properties of the others were designed to other in products that

software vendors committed to offering products that support it. IBM's SOM and DSOM, for instance, has about 20 committed independent software vendors.

State of confus

DEM's support for OLE is significant because there has been a rift in the industry over setting a standard for how objects will communicate with one another across the collectric. As a result, a number of carporate developers have put off folly deploying object-based applications while they wait for the dust to settle, Developers want ac-

for the dust to settle, Developers want occess to all of the relevant models, hence IBM's leg up on Microsoft and Digital with its Windows SOMobject tools, industry analysts said.

Taking an O.S. chievet and being shie to run it under

SOM ... is very important to us because we get acceptance on other platforms for our applications — AIX and OS/2, for instance — where right now we're only Microsoft-or Windows-specific," said Larry Harris, technical manager at Quiek America Corp., a New York market data market

Hillshord said

In both IBM's and users' favor is the pricing far SOMobjects for Windows, which analysis said is reasonable.

It mirrors the pricing for SOMobjects for OSC: 575 for single workstations, \$235 for a single workgroup.

Theref contract licenses for \$30,000 give an antimatice right to distribute ISOM across multiple operating sytems and historiess. and \$10,000 dlovs users to revi-

scan itality justice is as a man evolution man over a set. and the BOM within a single platform, more expected to Bugsta and hieranch, man man over expected to Bugsta and hieranch, man over expected to be platformed to the platformed to be platformed to bugsta of the platformed compiliant Output burshing the month, Digital officials said they are 'no read' and that they believe their aggreach is the correct non-Freducts incorporating the specification are not exceed expected to find like believe their after particular and expected to find like believe and a the origina.

Microsoft, meanwhite, is expected to announce new tools at the show that will ease the paint of U.E development. These will include the shilly to create O.E. server objects using Visual Basis development tools, OCX (OLE Controls) custom controls for OLE [CW. Jan. 24] and Line of Business Objects (known as LOBJects), nources and. The latter will offer customized objects for dors; longers targeting specific vertical businesses, according

in addition, Microsoft will announce a series of products for the company's Visual C++ family of development tools, according to company sources.

NetView/6000 to manage SNA

Peregrine and IBM products to compete

By Filesbeth Horwitt

Peregrine Systems, Inc. last week began shipping a product that enables IBM's NetView1000 pintform to manage IBM SNA networks. The more was timely, conside/fing that IBM expects to ship its own SNA Services for the SNMP phallowing a counter of months.

Walte Net/low remains the primary platform for managing SNA, products such as T-reception's OpenSNA and Coherten Systems, inc. a Blacvitation tap into "a groungestoner of encounter of comparation of the control of the state of

Trouble-shooting power Charies Selwah & Co., for example, intends to use Peregrite's esting OpenSA for OpenView to anange SNA in conjunction with a corporatewide TCPIP intend-work now being rolled out, said Boh Lee, senior manager on the covorking at the San Francisco brakerage, While NetView will continue to handle the bulk of SNA management, OpenSAA will NA

OnenView users troubleshoot not

open we want to be the SNA and TUP/IP protocols, Lee said. Another plus, according to users, is that graphically oriented SNMP management workstations offer enhanced graphic capabilities and ensirely-ograsp presentations of SNA data than existing

IBM's Graphical Monitor Facility. Those features will enable Schwab to provide OpenSNA for OpenView to less technical users at a recently opened data center in Phoenix. And 3M Co. ptans to implement OpenSNA to provide beto desk managers using OpenView with high-level information about SNA installations "before they get phone on its labout problems | from name " aski Warna Rombur an advanced analyst at the St. Paul. Minn-based manofacturer However Personine's SNA man agement on NetView:6000 will

som confront IBM's own SNA Manager9000. The latter's provided with New York of the fully integrated with New York of the fully integrated with New York of the SNA New York of the York of the SNA New York of the Yor

its SNA alerts and statistics from

NetView, while OpenSNA collects Its data directly from VTAM and other SNA utilities. As a result, OpenSNA users-could, if they liked, dispense with NetView. The integration with the host-based net-work management system allows: users to configure NetView to automatically respond to alerts that are recorted by NetViews9000,

Cableton is proporting to restructure Block/sino ot that, too, can function either with or without Net'view, a spides round to the Rothester, N.H., firm noid, Bluevision will also work with Sterling Software, Inc's NetMaster. The company also plant by your's not to empany also plant by your's not to empany also plant by your's not be company also plant by your's not to empany also pignate by making the personal properties of working installations. Cableton also piams to incripate Bluevilson SNA management applications with other motifiame applica-

OpenSVA for NetViscotion is preed starting at 827.70.
Preegrain also amounteed Sension Breeap, an OpenSVA application for expairing and anhyting 2710 sension inheranton. The distances of the starting and anhyting 2710 sension inheranton. The distances of the starting and anhyting 2710 sension inheranton. The distances of the starting and analysis and analysis and starting and analysis and starting and analysis. The starting and analysis are the starting and analysis and starting and analysis and starting analysis and analysis and starting analysis and analysis. The starting analysis and analysis and analysis analysis and analysis and analysis and analysis and analysis and analysis and analysis analysis analysis and analysis a

priced at \$24 900

nyperbesk backs of CORBA. See page 30. NetWare 4.1 delivery stalled.

By Elisabeth Horwitt

Hovell, Inc.'s shipment schedule for its crucial NetWare
4.1 release has slipped again, this time to the fourth quarter, the company announced last week.

The upcoming version, originally slated for a midyear shipment and then shilled to late summer (CW, March T), is expected to deturn a slow of new features and functions that many users consider critical to a commercial implementation of Nowell's centerprise network service platform.

Last week's decision is the result of feedback from Netwell sales and Netwell's a decision is the result of feedback from Netwer States and Netwell's 2.01 customers, who naked

for enhancements beyond what Novell had planned for the next version, Novell spokesman Bob Young sald.

Among the features users requested where the following:

Directory enhancements, such as the ability to distribute the control of the control

NetWare Directory Services (NDS) upgrades across multiple servers using Novell's software distribution facilities. Stronger integration of NetWare 4x and NDS with services such as NetWare for SAA, NetWare/IP and NotWare NES.

This would enable such services to take advantage of the NDS directory. For example, it would allow NetWare clients to transparently access a mixed environment of IBM bosts and NetWare servers.

The hand news for aircoady imputiest users is that they will now have to wait until the fourth quarter for key function; such as Neelsync, which provides full NIOS support for Not-Ware 3.x, and tooks for merging and pruning NIOS trees. Novell had nutil recently hoped to announce those tools abend

of NetWhre 4.1, Young said.
Novell is still trying to decide whether it can deliver as
NSE implementation for its Global Message Handling Service ahead of NetWare 4.1, Young said. This capability was
originally along for a uniform release.

Novell will deliver a NetWare 4.01 refresh this sommer that will fix some outstanding bugs and incorporate all the release's current patches, Young said. One such patch oliminates the problem of NDS directories occasionally freezing us so administrators can so longer-change them.



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ware platform including IBM, Digital, Hewlett-Packard, set you free. Software superior by design of community Associates International, Inc. One Computer Associates Plaza, Islanda, NY 11788-7000. All product names referenced herein are trademarks of their respective computer.

OpenDoc: A path to interoperability

eiter will be assumbled from discrete modules or come nents If the Component Interration Laboratories can deline on its plane for Open Dec this year that day will be closer than many people believe, and software will more concer uses stany people ocurve, and software will not clearly resemble barries on that is assumbled from off.

e-shelf parts Once Doc was conceived as a compound document architecture hat could be together diverse types of data in a document that was shareable on a network Apple IRM WordParled and other parties were working from their own vantage points on nieces of what turned out to be a common problem. They decided to coordi-

te efforts through the Component Integration Laboratories The letter mirhs be described as a paper organization rather then assisting concerns. There is no inhoratory or staff at Compa nent Integration. The technical work has been divided among Annie. HRM and WordPerfeet, with each party working on pieces that are erucial to its own product line. But they have agreed to use ents of common interfaces a common means for objects to ex-

change messages, a common storage system that can keep compound documents

intact etc "We started thinking about distributed objects becourse was felt that was how and we sent their many said Cliff Reeses director of seet technology products Uners may pover see the

beeller pro-AND DESIGNATION OF THE PERSON NAMED IN meters that ours forders's e interretal Charles Rahrock

herefits of elient/serve compating if they do not have the means to distril ects over a network or share them across platforms, which OpenFige promises to do with the Macintonii, Windows, OS/2 and

To get commercial developers started, software development hite will become available in beta form for each platform this sommer with final versions available in the fall. Each kit will not be propingly the same but rather will reflect the state of the art for

nach platform. Nor can if be assumed that cross-platform intercoerability will be implementable in the carry stages Nevertheless, OpenDoc provides a supersiructure for these offorts. It opens the way for applications, such as WordPerfect's word processor and Borland's Quattro Pro. to be Integrated into

more componentized systems in the future as their makers begin to implement Open Doc interfaces and features into applications Onem Doe's five main components are the following: . The System Object Model, a language-neutral mechanism for ob-

earing that was designed by IRM and adopted as a standard by the Object Management Group The Apple originated Beoto object storage facility, which is simi-

lar to an object-oriented database facility that can store and retrieve objects or compound documents as a single file.

The Open Scripting Architecture, which is modeled on Apple.

Serint and is a cross-platform scripting language of 14 basic verbs and nouns, usable for widely divergent applications. *OpenDoc's set of common APIs, which provide for interactions among operating systems and across hardware platforms.

*OLE 2 8 interoperability for OpenDoc under Windows, which is being supplied by WordPerfeet. An OpenDoc-compliant application can serve as a container for

an OLE object. OpenDoc will supply the translation for a call to as OLE object, and for that matter, Open Doc objects embedded in OLE sonlications can respond to an OLE message calling them The latter could be a decisive feature in the eventual acceptar

of Onen Doc Software developers who adopt the Open Doc architecture will have use of an architecture that gives them the equivsignt of Microsoft's QLE 2.0 facilities as well as more ownerslized. larger system capabilities.

Oracle targets workgroups

Oracle Com piece to disclose tomorrow a washington break to assess to assess 7 date workgroup sever versus or an order r and many case and acceptance of the contract of

Called Worksroup Server, the product will The Ord and Misses of Com's Win run on loss a Coy2 and mercoson Corp. a war-

This is the second in a series of efferings simulated Missessation 2001. Possesson Character pagests nameu as aucroson s Sqt. Server, Oracle previ-ously shipped a similar-level database, dubbed

OracleWare for Novell Inc.'s NotWork While OrneleWare supports 5-, 10- and 20user setups, the workstroup edition of Oracle

will enter to the next highest user tier said Nimish Makes wise precident of deckton products Oracle has grown fat selling relational data bases primarily to Unix shops but must now took to other areas for continued month sold Dich Debeisteln on analyst at Performance

Commentered Chinese Several more unicomed the idea of easier to manufacture tollowed Openie products "Lose more departmental elient/server systems to ing up than his enterprisewide projects." said Jaffeev It Firestone director at the South Crototal Operate Viscon Operate

Westerness Comes will contain the barin functionality of an enterprise level product but will not offen energalized high volume features such as replication or on-line backup, another Oncelo incides said Installation procedures collecte menter sand. men

Microsoft's supressive pricing for SOL Server for Windows NT has forced Oracle's hand Finkelstein seid Bressenste a Wasser Univ. haund Granie 7 database costs about \$42,000. apporting to Oracle: on unlimited user edition of Minerally SOM Comment for MT money hills in prised at \$15 own

"If there's are thing that hugte Oncole it's the hig backs people have to spend on the product. anid Edward Eliolan, chief executive officer of AAI Technologies Inc. on integrator and re-

Pricing for the workgroup version of Oracle would narrow the price gap between it and Mi would narrow the price gap between it and su-

h." Mehta said. He declined to cite numbers. And because Microsoft has made an art form of selling through indirect channels. Oracle is recruiting similar outlets. Oracle claims to have signed up more than 250 NeiWare resell are to partitle OracleWare. Those firms will likely well Worksmann Sorger as well

Application manager in works

New management

Dr. C'Eraboth Homets

Lower Corp. and IRM last week appearant plans to produce an industry standard for collaction about and statistics from client/server applications so SNMP piatforms can collect and analyze the data However the due will commute with corned other would be sten dands sutters in their efforts to get key developers to adopt their agent, according to user and analyst sources

Code named Measure: the project plans to produce by the fourth quarter a software develcoment kit that will enable velocers to create acreas

that sit on each system and collect key statistics about their applications. An Agent Management System will provide a means of distributing and undating new and existing agents that are distributed around a netmore

intelligent savots such as the one proposed by IBM and Lewest are "a really im-

nortant missing piece" of charticowns management said Jeremy Frank, an analyst at research firm Gartner Group, inc. in Stamford, Conn.

Platforms such as Hewlett-Packard Co.'s OpenView and Novell, Inc.'s NetWare Management System can monitor performance and exnow on Days and NotWare company

However, no standards exist for allowing such pintforms to get down to the application level to discover for example, whether a role tional database management system has cor-

Several overs said they want to see such a standard, but they opestioned vendors' ability

and willingness to deliver

Martin Mariatta Corn. (son story name 1) is surjects seeking such tools, according to Frank Belland, a senior communications consoltant at the company's Oriendo, Fla., toestion. "If an application under Windows or Unix or a mainframe aborts." the system should be able to notify the Simple Network Management Protocol (SNMP) enterprise manager, which can then open up trouble lickets. "This process does not exist today" he said.

The Internet Engineering Task Force (IETF) recently

ennounced on RDRMS mon nent information base that defines a standard for storing management data about database systems so It can be collected by an However, the ETF stan-

dard addresses only one piece of the purrie Mean while, a number of vendors are working on their own proprietary application management agents, Frank said. "The ouestion is who can get an intelliment

ament into the key RDRMSe first Potential rivals to IBM and Lorent include HP. Candle Corp., Tivoil Systems, Inc., OpenVision,

Inc. and Microsoft Corp. The Legent/iBM agent will eventually sup ort SNMP Versions 1 and 2, as well as the Object Management Group's Common Object Request Broker Architecture and the Desktop Management Task Force's Desktop Manage-

meni interface, the vendors said.

rk is Composite records a technical editor. His MC1 Mail address is \$75-2737 COMPUTERWORLD MARCH 14, 1994

Oracle7 Parallel Server: Breaking the Single Server Limit.

Applications built using a first-generation client/server database cannot access data on more than one server computer without a lot of extra programming. In contrast, the Oracle? Parallel Server database enables applications to access data on multiple server computers just as if all the data was stored on a single server. Which is one reason who of art of the not 10 fortune 500 companies run Oracle? on their narallel systems.





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Chicago to enter heta testing soon

Microsoft Corp. plans to eventually send the broad end-user beta copy of Chicago to hundreds of these ands of upon. The first phase of the beta set for the sands of users. The first poace of use octa, set for the er company officials said last week. The second er company officials and mor week. The secon

Teleport to offer less expensive Centrex Teleport Communications Group, the country's first alternative access carrier last week became the

first to offer Contray pervises Teleport will launch its first to other Centrex services, reseport was same a terother cities to follow. Pricing has not been set but a enokrenerson said pactomers could use savings of the to 150 owe local exchange company Centrey rates.

Marintosh software for Sun. HP

Apple Computer, Inc. is expected to disclose on Tues-Packard Co.'s HP/UX and San Microsystems, Inc.'s Solaris operating systems. HP Vice President Wim Residents last much confirmed that HP/UX will soon support Macintosh applications, but Sun and Annie ort macintont approximent, our out and Appword to bomment Still missing however in IBM. which has oledged to run Macintosh software on its DO 20000 I laiv horne

Tandem has narallel relational database Tandem Computers, Inc. is expected to boost its chent/server strategy this week with a parallel procouning version of its NonStop/SQL relational database for servers. Also expected is a joint venture with Micro Porus Corp. to build a parallel interface to IBM mainframes CICS transaction monitor. The new prodnets will allow Tandem database servers to handle sands of elient requests at telephone, banking and rate il companies Tundem said

Lotus ups support ante

Lotus Development Corp. is scaling back its free support and adding several new fee-based support programs for its Notes and CC:Mail communications packages, the vendor said last week. Specifically, the nany reduced free CC:Mail and Notes support from 90 to 30 days and added toll charges. Users of the desktop applications will still receive 90-day free support but must pay their own toll charges. One new nunications program gives Notes sites access tria Notes) to the technical information database used by Lotus technicians for \$20 to \$50 per month. Another option gives neer sites a dedicated senior support analyst for \$35,000 per year.

If you want fast LANs, sign up here

A vendor condition is expected today to announce the formation of the 160VG-AnvI.AN Forum, an information-sharing group for organizations interested in HP. IBM and AT&T's proposed 100M bit/sec networking topology. The IEEE 802, 12 subcommittee is reviewing 100VC-Anvi AN as a possible industry standard for high-speed networking.

HORT TAKES Ameritech Corp. and British Columbia Systems Corp., a Canadian government firm, will form a joint venture to make state, county and federal data available on-line. . . . The Chiengo Stock Exchange has appointed Glea W. Beldon to the new post of executive vice president of technology . . . Infonct Services Corp. has added integrated Services Digital serwork access to its InfoLAN LAN-to-LAN value-added network.... HP last week out prices by up to 20% on its HP 9000 Series 700 workstation line.

NCR sites warv

on forward teams will be negative for me " said customer-tocused teams will be negative for the, 1840 microscing manager at State Industries

His local account representative was transferred has most blacing State industries' account in the hands of the Atlanta office Garrison said one of the hands of the Alianta office. Garrison said one of the was the proximity of a local sales ren. The absence of

line and downs

Performance since 1991	Performance under new CEO	Business measures				
:3,53	:1.8	Technology leadership				
:3.7	3.5	Customer support				
	:3.66					
:3.4	3.3	Integration of product lines				
	3.2	Pricing vs. its competitors				

Radings are based on a scale of s to 5 where 5 is very good. Resed on a maximum of 45 MCS sites surveyed by Find March Research between Feb. 28 and March to. such "will probably influence my buying decisions in

Daniel Report vice recordent of information technotion at Investo Funds Group, Inc., a mutual funds group in Denver that runs an NCR 3600 massively parallel computer on NCR 3556 server as well as other systems, said he hopes the customer-locused tactic will enable AT&T Global Information Solutions to respond wholly and in a more coordinated manner to Imment's series entermise competite requirements

The service initiatives are part of AT&T Global Information Solutions' overall re-

the future "Garrison warned

structuring offerts which followed its enemertacular financial performance. Last year, the unit saw its revenue climb a measurer 2% to \$7.26 billion. For the year, it posted a \$171 million loss, sided by \$288 million in restructuring charges. which the unit took to offset pension costs and an early retirement program.

There have been his problems with the NCR acceleration and ATAT admitted that by taking the restructuring charge on "enidCraigW Fills, a senior teles munications analyst at Wheat First Butcher & Singer, a Richmond, Vs., bro-

This year could prove more promisin A year after taking the brim of AT&T Global Information Solutions, Chief Executive Officer Jerre L. Stend has plotted a course that many industry pundits believe will return the company to profit-

By ary made Stead has made a spring of agreeming restructuring moves by applying a formula similar to the ooc that beiped him return AT&T's Global Business Communications Systems division to profitabil-(ty within nine months.

to addition to cutting AT&T Gtobal leformation Solutions' bend count by 16%, from 53,000 employees worldwide to 45,400. Stead has created new financial incentives for the sales staff and sharpened the focus

on six key vertical esstemer industries _ seed no. riceably the banking and retail sectors.

to an intendent Stead said the bulk of the ATAT. unit's restructuring is behind it. "We'll be solidly in the black in 1994 and beyond

se black in 1994 and beyond. and a nearly forward and hureaurratic NCR that shad. find through the late 1980s and party 1990s NVD w. noted standy to the industry's shift to distributed proacted stowy to the industry a sunt to distribute procensury and cuent/server computing, only to water inc. and Hewlett-Packard Co. begin luring away the

> And when NCB received by developing its System 2000 servers and workstations those intendestions were hindered by development delave in intel Coru's processors and software mys in missi corp. a processors and software modifications required to appoint symposes. multienonouring

Coolleel metters

unc. and rement-reciting Co

The company also set unrealistic grade for de-I me compady also see unreasure goals for de-livery of software products with lengthy sales excles. One such product was Cooperation an ambitious groupware package that uriginally dress a great deal of interest but has thus far had a marginal impact on the market

in fact the vendor's groupware products. which include Processit, have long selling eveles and adoption periods that require custom ers in make a great deal of organizational change As a result. Cooperation's lengthy sales eveles made it difficult for NCR to meet its original delivery and revenue schedules, ac-

cording to Nine Lytton, president of Open Systems Advisor a Ronton-based consultancy. The combination of these factors beloed provest

NCR from kneming page with the rest of the industry and finally began affecting its bottom line last year "They didn't meet their revenue and profit roals because they didn't meet their product goals, and their marketing campaigns were poorly organized," noted Michael Goulde a senior consultant at Patricia Sevhabit Casses in Borton

However ATAT Global Information Solutions' technological strengths are starting to show. As users be-

eto to transform their mainframe computers into enterprise servers and data repositories, some users and analysis are expecting massively parallel proressing (MPP) aystems to fill the void for high-end computing Most analysts said they believe the ATAT unit has a two-tothree-year jump on MPP newcomers

Things are looking up Currently, AT&T Global information So-

el Stead (SET) of

1T4TClobal lafor.

mation Solutions

ankwountedges (hat

steamer efforts to

average NCB and the

AT&T's computer

would have led to bel-

constructs aroun

intions has a 40% share of the \$500 million commercial parallel processing market, which is expected to grow 20% annually according to Dataquest, Inc. a market research company in San Jose Calif in fact, the former NCR's ploneering offerte in the MPP arena have helped it win several large customer contracts, including Wal-Mart Stores, Inc., Delta Air Lines and Kansas City Power &

ler products today Light Co. We were impressed by the system's ability to access varieties of data such as general ledger and customer hilling from a single source," said Forrest Grapes, manager of technical services at the

Kanass City, Mo., utility Net it is the ATAT/NCR combination that led 800 Plowers, a Westbury, N.Y., teleflurist, to become an NCR customer, said Chris McCann, vice president of operations. "The main driving furce behind our going with NCR was our relationship with AT&T." be said.

RAI 199	NK 92	1991	COM
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Court awards AMD right to use Intel code

In what could prove to be a major victory for Advanced Micro Devices Inc (AMII) In its legal struggle with Intel Corp., a iumake work owned AMD the right to sail a microprocessor containing built in Ina micro

out an earlier ruling in intel's fours he cause the chin dant withheld country

The decision means AMD will and have to produce 1950 with clean room microcode or pay potentially crushing dam. come to late

"It's a his positive for AMD because it

allows them to ship their original 480 the second of Venture to 1 Oriet contract of the same of the same the the desiries would be nothing to for

AMTY connects: problems Made the same forward on the miner code in the 287 multi-component the do rising is believed to cut a succedent for

have sensore why they call them servers when it seems

like most of the time you're the one down all the serv-

until At Company we felt it was time to put the region

back in the country. Make them every to manage

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TriPleviPISA architecture. Hot-oluscable storage. Proac-

Fish-Sowrmim Fault Management, Just a few of the

tive server-management software, CD-based installation

other latel suits still austing and AMD respecting Intel's \$1338 and 1400 properties While Intel enterels the othor cause will proposed based on issues othershan AMD's right to use missecode F Thomas Dunlan Intel's chief local compact sited compacts control mass comment, the separate control proriugis on the 400 hs the mant point

Data transfer CONTINUED FROM PAGE 1

of un to 512K bit/sec Pricing for individual ISDN company Tricing for individual total connecexpect to new \$100 new month for such a configuration Lessolling charges evernon \$400 per month for a 560 bitiese transmission rate the soornes said

Monomer the nearce device will have multiplexing intelligence that allows it to stically provide the personne handwidth to transmit a given file which means meets will pay only for the bandwidth they need. The device will also nee form compensation which to Complex's strength. The commany offers data comntersion products for the networking market Disect Pouts is its first interest working product

White pricing for the Direct Route access device was not available, no estimated it will range from \$1,000 to \$7,000 It is also protocol-independent so it does not have to manage protocol tahies and almosthms thereby reducing

the cost and comptenity of the box "This sounds like it is exactly what we need and i coment this will totally change the complexion of our beginess " said Mi. chael Benes, president of Benes Commu nications, a graphics design firm in Lexington Mass, that will be a beta site.

For example, Benes currently sends menhior files to elients and printers on disks via Endoral Evarous Corn, rather than via leased lines, which he said are too expensive Direct Route would allow him to sepd files directly to clients on and allow him to do bust with remotes sites for which Pedex is imactical "It could notentially doub our business overnight," Benes said. Analysts compared Direct Route's ca-

nabilities to ATM and said it is the first system to fully terrence the benefits of ISDN, tt will bring Tt-comparable performance to small and medium-size companine which often cannot instify the evpense of leased tipes

"With Direct Route, users will get a tot of the benefits they expect from ATM tomarrow from tSDN today - and at a very affordable cost," said Kathryn Korostoff. president of Sage Network Research, Inc in Natick Mass

However, analysts said Symptex faces a major hurdle in convincing users that ISDN is here and that it works. The technotesty has been around for nonethy 15 years, and the industry has been slow to adopt it. For example, there is still no coheatyr ISDN standard for developers to conform to, so users have been besitant to embrace it they said

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Dan Hendricks and Mark Mroz in Consumer Information Management at AT&T are part of a 1000 strong programming staff in Piscataway. New Jersey.

As mainframe programmers, they both know

"A typical fix to a program, maybe a quick edit and compile or something, could easily take you half a day on the mainframe," says Mroz.

They began using the Micro Focus Offloading Selutions two years ago and found "everything we could do on the mainframe we could do with Micro Focus COBOL". The PC is so much faster There are still times when I have to go back to the mainframe, but I really-do not like it. I try and saver clear of it, frosable."

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producing quality ende before I ship anything out All within a couple of hours," says Hendricks.

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CON COMMENT INMINES CONTINUES

Defense mergers

COMPANIED PROMPACE

asker Southoon last much said it would mer sex, retycoron uses were said it would out 4.400 jobs, or about 7% of its work force A Postbook mohamman de clined to assemblate how the layoffer mout by in Manuschanette might affect IS But she noted that the Lexinston, Mass. haved contractor has been consolidating other support functions such as account

ing finance and human measures named and number resources. industry wateriers warned to at the ouyou or unumman and maries started at its

Not an answerence Both companies are operating on main. forms technology that is largely oben-

total Total Combon Name associated of CO Received in Dale After Calif "Roth are acrospice Systems mat summe traine to move into client/server archias a temperate for now trust tectures Any one of the aerospace firms.

mach + 1

e in that same boat.

The strandondination and into THE RESIDENCE COME AND THE granion of esectronic man, exetelephone systems will nose hude terepagne systems was pose in chnical challenges, Kemp said. Joseph R. Cicvening, vice press other printed to bis companyor's an quisition of General Flectric Aerospace Systems last summe

Mastin Masiatta u attonuely con mitted to client/server computing and open systems. Cleveland said Since we marged with GE Apro Since we merged with the Acres mainframe application starts" he said. "All our new applications are elizationmen beard

India of 5 ---. . . fam D. Rizmedl, CIO; vice Top 15 ---..... omber of PC

Far-reaching impact

h-1000 -- 110-4---

20% savines Nett International Inc. "IS people are most resilient to see

Since late last year. Martin Mariette has have reconstructive and from its notwon tion electronics missiles materials and echan basiness units into a Distant one

nirether in Oriendo Fla Cleveland said the encount shifts committed to sources to where they are most readed and should reduce IS staffing levels and conditional in

Peter Ascritis, an acrospace analyst at Pirut Boston Corn, estimated that the merged companies would trim 10% of their combined work force in the next couple of years, especially at Grumn headquarters Martin Marietta now em please \$1,000 Gramman 18,000 and Nonthere should 20,000

But IS may not be as hard hit by the layoffs as other disciplines, according to Richard Wonder, national director at the 18 division of employment agency Robert nomic downturns and problems " care-

cially business-sayyy systems analysts and network appointing william to minante becold Victor-Janulitis chief executive officer

of Positive Support Review, a Santa Monica, Calif., consultancy, said that even with layoffs, cost savings are not guaran-

There may be disconomics of scale and some dissatisfaction when prople realize they do not really get two for the price of one "Japulitis said Tony belong business editor at trade

publication Aviation Week and Space pumeauon ariation week and Space Technology said, "With the addition of Commence and their complementant technology and programs, the new comnany will have critical mass in a multitude of core areas

Congral Motors CONTINUED FROM PAGE 1

Development Corp., which is supplying its Notes groupware platform, is said to have made its largest single Notes sale to date to EDS for the project. Similarly Comoso Computer Corp.

which got the nod to supply the desktop and laptop systems, is believed to be looking at one of its largest nongovernment sales ever. Neither Compaq nor Lotus would specify the size of their contracts for COE however

Established direction Analysts noted that a push toward a concistent information systems infrastructure is not new at GM

"CDC" antim shorter over since (then-GM chairman] Roger Smith bought them (in 1964) has been to hammer away at the proliferation of systems within GM and move to commercial packages," said Martin Piarczalski an independent industry analyst in Ann Arbor, Mich.

Automakers have been notorious for developing homegrown software, and GM led its competitors in this regard,

But other observers pointed to EDS' long learning process at GM, noting that when GM acquired it, EDS had no suto motive experience and little background in distributed systems. "It's a different errial challenge to handle a

married of PCs then a few mainframes," said Gregory Grusks, a principal consultant at The Third Generation, Inc., consultancy in Orchard Lake Mich There is a morning concerns

that common platforms in both hardware and software are necessary to curb what can be crip pling complexity for enterprise commuting Pierrealski said

"Clearly, the best way [to shorton the time it takes to bring forth new products) is to have multidisse vehicle teams in marketing, finance and engineering," Piazezalski said As these teams

have been geographically dispersed, "it becomes essential they can communicate with their neers both within a despressed and between departments Other automotive observers

lowever argued that the COE EDS effort is really a practical response to the massive organiza-

onel consolidations that have sweet through GM. Simiffeently before taking over the GM halm look Smith was in sharem of GM Europe, which successfully out to place

GM Isunches 16-month project called ent Office Envir

Food computerizes design by to get every department involved in conduction of one past - including design. manufacturing, shipping, purchasing and Ford uses a single system for

ing products. The system serves 20,000

mbly operations

Many some Chrysler installs two Dieltal WW to handle explosive growth in its advanced manufacturing group her appa Chrysler picks MCPs Global Data Network to help automate worldwide auto a "consistent" office environment stratnow three years ago (see how) According to sources at GM and EDS. all the contracts for COE were by design.

signed within 90 days of one another in -14 soon the commercial the contractor are structured on a per-user/per-month basis, allowing GM to ramp up the new system without incurring capital spikes. While GM would not confirm the worth or structure of the contracts, company officials said the EDS deployment and subsequent operations will cost GM the some as or less than the company spends

for its computing needs today

Meunuchile, EDS officials said they are rivately thrilled with the magnitude of the COE initiative, binting that they will be able to take the approach and graft it

onto other large users Analysts agreed that EDS has as much an GM to main from the success of the gi-

David Marshak, vice president and senior committent at Patricia Seybold Group in Boston, forused particularly on

the size of the Notes deployment pavisioned by COE. "One of the large opportunities in consulting and Integration will be consulting practices built around Notes, and [COE] propels EDS into the forefront of that activity," he said.

Enterprise Client/Server: Distributing Data



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candid conversation, she shares her experience and offers some valuable advice. For your own copy of the tape "Distributing Data In The Client/Server Enterprise," call 1-800-SYBASE-1.

Apple gambles on Power Mac

Data Down DC docktone will aid faltering fortune

Annie Committee Inc. today emburks on report Computer, inc. rotaly transfer and in the corporate market with the learner of doubtes markings brigged on the Down erPC chip. Company officials said they bore to sell t million units in the next

Uses and analysis last made said that Annie should achieve its sales mail even though it has so far signed up only 150 developers for the new platform Among the mesons for its ontimist

Among the reasons for its optimism bility with existing Macintosh software Even though the old software cannot take advantage of the PowerPC's speed. early assessments are that it runs prob lom-free: Users baying new Macintoshes will more likely buy a machine for which Apple is promising more native software

Programs written for Macintoshes based on Motorola, Inc.'s 68000 chips will men under employing on the new line but Amely appearable or said those should be no permible difference in performance Native applications however will run two to four times fusion than (SOO) appli-

"I'm very pleased, especially with the compatibility which I was expecting to he problematic, but it's not," said Michael Keithley, information systems director at Creative Artists Assures: a

December 1970s Calif. Industrations "There need to get more identificated mine but the feet that it has such colid emplation has exceed the need for native commenced has eased the need for matrice

Hates Hastrook added of "The Hartand Latter concurred "Rand of what Don seen of ampletion and with the I've seen of emutation, and with the million is consequently be used "I'm needleting 1.1 million by the end of the

He added that sure of lower-rance BROOK-based Macintoshes will actually notice a performance boost ander emulation while users of higher-end Marintoshes will notice a slight decrease in nectormance liners also cited the Pensor Manietoch's ability to me Windows soft were though anceds are slower than on

On vour mark, get set ... Apple said last week that about 50 nutive

Intel Corn PCe

Go flower

ne fitte ne En edir in

tha Secomentup, o

ain on the bas

etions will ship within 30 days of the Berne Meniatosh's launch today Those include Claris Corn's Claris-Whole and Clasicimnact Adobs Systems Inc's Photoshon, Aldus Corp's Deschieber and Freshand WordPorfeet Corn's WordPerfect 3.0. Lotus Developmost Corn's CC Mall and Quark Inc's Occash Vilheran erosoft Corp. will not be amount the

earry providers of native soil

With the three-model Preser Mark tion Analy served it will someway the how that has pleased its 69000 hazed Marin. that has pargued its touco-cused macur-

tel-based PCs the Marinioth line has long been higher priced, slower and less long been higher priced, raow



But the DowneRC 804 chin driving the new line weights in at 60 SpeciatSC, comnamed to 64 5 for Intel's featost-shinning Pretium according to figures provided

73- ent's floating-point performan menore outneers the Pentium's at 80 Special? vs. 56.9. Those figures, Apple operation and will aim the Beauty Man intends a distinct adm not only in techni cal and financial programming but also in the hummoning multimedia field The Marinlosh "finally has the pro cessing power we need for multimedia markings "said Joe Harris, president of

Midy Worldwide Inc. a New York, hazed midit worsewice, inc., it new tork-based until recently can a Macintory shore of NEC's television stations division, said NBC's tesevision stations division, asid

he is recommending the smeattens over "The shillty to run Windows and the Maginton operating system is very atmacintosis operating system is very inmanager in customer service subsected manager in customer service introputted Co to December of Colle O. In Prosenting, Court.

Delainerforthe new Downs Magintoches

starts at \$1.819 for a 60-MHz GIGGIGG with a 180M-bate hard drive on the same of Mile 2100 for with a 250M-bute hard drive and er soo for an 60 MHz 0100 mg a 250M-byte hard drive

Apple is committed to leader menting the PowerPC chip mad by IPM and Motorole suggest all of its platforms in the next year said Brodie Keast, a vice president at Annie's Personal Computer Divi-

The company will begin with midgange to high-end machines today, implement togethe Descript in about our third of all mintocher built by the end of this year Annie will also work the chip into PowarBooks and lower-end machines next

year Keast said. By the end of 1995, about 80% of all Mariatosh computers will use the PowerPC chip, the company said. Paul Kerr product manager at Insignia Solutions, Inc., which is making emulation coffware for the Power Marintoth noted that a Windows application would run on a Power Marintosh at about the same speed as uo a 386 or a 4868X

First Pentium clone ships

Ry Michael Pitzgernid MILPITAS CALL

Formtien but not gone, 5-year-old Nextlen will today become the first company to ship a clone of Intel Com 's Dontium ohio.

refien is neertiating with IBM Microelectronics to build the cloned processor. Like Pentium, NexGen's NXS86 in a

construction renovator But it has being the up bearif peoble and a built in I must 9 cache controller and it is already ing thus beating both Advanced Murro Devices Inc and Cyrix Corn to market with a Pestium-class processor.

Yvesl' a software testing laboratory rated the NX386 fully binary-compatihie with lotel software

"It's the first time intel has had comtition this early in its product evelo said Michael Slater, editor in chief of 'Microprocessor Report," a newsletter

in Sebastonol Calif. States eautioned that he does not expect to see NexGen pose a threat to Intol, despite its 4% priced Protium work-alike, Rather, he thinks

NexGen will garner a small piece of the market, simply because Intel is so dominant. In fact, NexGen expects to sell only 100,000 chips

this year, according to NexGeo President and Chief

Propostice Offices Atio Power Russemall U.S. bardwaresvenders.—Tunerni Comnuter Corp., CompuTek International, Inc., Adisva Corn and Lucky Computer Co - will approprie systems that use the NX586 processor.

Priced at less than \$2 000 to start, these compani should ship systems "almost immediately," Raza said A number of Tubannese motherboard makers will demonstrate NYSEE matherhousis at this work's CoRIT '94 show in Hannows Germany

NexGen will price the 60-MHz version of its chin at \$450 vs. Intel's new DX4, which costs \$475 for a 75-Millermenion

The NX366 also comes in a \$506 66-MHz version but it does not challenge the nerformance of the new Pentium P54C chaps ICW March 71 NovGen is now shinning a A NewGen 586 system version that supports the Video Electronwith a 60-MHz MT.586. ics Standards Association VI. local bus and will this year release a version that supports intel's Peripheral Component Intennomned local has

NexGen also built into its rhin a layer sulfed DISCHE which breaks down suffmany instructions into feeten PSDC code

A constrate floating-point consuccessor sells for \$87. The company skupped the built-in floating-point unit because so few intel-based applications require floatingpoint, according to Raza.

Raza said the NXS86 is a new design that does not infringe on lotel's pateots. Having IBM as a foundry may be key in beining NexGen eyade intel's lawyers because IBM has broad patent cross-licenses with intel. Cyrix's similar relationship with another foundry has belped it stay in the lotel clone market.

Talks target PowerMac clones

By Michael Fitzerrald and P. Connection

Apple Computer Inc. is in serious talks with longtime competitor Compan Computer Corp. to get Compaq to hulld a Power Marintosh clone, sources close to both companies said last week

A Compag spokesman denied that pegotistions were under new easing there aver "on such plans." Apple If Apple were indeed to

persuade Compaq to build a Power Macintosh plone it could spor demand for the PowerPC outside of Apple's installed base, thereby threatening the lock intel Corn has on the micropro-

cessor market.

The two archrivals would have different reasons for considering a deal Apple needs Compaq to give Powor PC the boost it requires to be credible in the marketplace, while Compaq could position itself as the dominant PowerPC clone maker.

But building a PowerPC close could threater Com

nan's status as Intel's secced largest customer and its preferred vendor status with Microsoft Corn Among the industry ob somers convinced the Comso/Apple deal will happen

is Will Zachmann, presis of Canopus Research, Inc. in Drybury Mass "Annie will define the PowerPC Reference Platform as a Mac and then license it to a limited number of vendors," he said last week. "Apple's plan is a beilliant one. They'll give thomoshop at least a six, to 12-month head start against vendors [that] license Powor Macs, but they'll overcome concern about Power

Macs' Apple-only proprietary strategy." Zachmann said Apple's PowerPC-based Macintonbse will be a major moseur "Both IBM and Microsoft are underestimating the role Apple will play" with their new systems, he said.

Microsoft to extend file-sharing Mail server

Du Lumdo Dudocorioù

While Missour Com is flexing its manketing muscle over its uncoming client/ server messaging architecture officials to noteb up some problems and extend regimen in the support file charing Mi-

crossoft Mail server oson man server. II microsoft ropows unrough, it success mate and 8 million Mell upone Many upone have complained about the current

file-sharing Mail, yet they will not be ready to move to the client/server verclose in part because it requires a Windown hit comme "Decode area" tenings to man out and just iumn into the chent/server E-mail sys-

tem" raid Mark Tabbe president of Lanta Come a contame latermeter in Chionen Ruther many will want to sten into is her first fining the hoom in the current file-sharing varyion he said

Low on the list

But while floor are so the nemeds there and Mineral Confession and will not be ready for at least three months after the elient/server Enterprise Messaging Some (PMS) shins in the third quarter a snokeswoman said last week

"Two just been pulling my hair out late. iv trying to make [Mail] work well for us. and it's just not working," said Ed Wilk.

a network manage at WHDHTV in Roston Meanthile The elizationima dates "sound great.

and it's wonderful to talk about what's oning to happen years from now but I need to fix problems with what I have now it seems like they've to-

tally dropped the ball on the DOS veralon "Wilk sald For example he said he has trouble getting the DOS-based Mail directory to exchange information with Novell. Inc.'s

NetWare hindery Greg Scott, a computing service manager at Oregon State University in Corvallis, said one issue he faces is separatemistering message-storing files

for the DOS and Windows clients. The information for Windows is stored in a consecte area than the mail messages for DOS," Scott said. "If you choose to synchronize the two, in essence you have two copies of every message that comes in." In addition to added

administration, that runs up the amount of space the system occupies, he said. Other users identified problems with specifying routing paths between different message servers and installing and managing gategrays.

in response, Microsoft officials said iast week that in the new shared-file Microsoft Mail server (SFS), messages from DOS. Windows and other elients can be stored in the same file oo the server or directly in the client software. Users will he able to use the same utility to administer all the messages, said Jim Wright, a

an product manager. SSS directory muting and administra-SPS directory, routing and administra-V 400 leaves of and few commentalists and Laure lossing manager of the messes. Landra of manager, a

g manness that. client ICW March 71 that the elient/

comes PMS will see It will also easile SPS means in one new features such as

one of the series of the Name of State of Stat mell GPC mean may have to deploy another server machine to run those canaother server machin

Missourch said it intends to tallow CDD MINISTRALIA IN LINCOLD TO MILAN STS comments with roughly 50 uswant to keen Mail on the NetWeen Sie somes nother than install a senerate server rather than initial a separate Jonnium advantaded

tifule the undeted CPC should need some of the problems users at amount large sites said they'are ready to move to the elient/server version soon

santage to bridge ID divide. See page 55.

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News Shorts

The internet channel proliferator

Continental Cablesteins Inc. and Park Systems International Inc. in Herndon Va. Inst week announced initial delivery of internet services over Continental's fiber-optic trunk and cable TV net Cable, supports TCP/IP on Ethernet and Token Bins LANs at speeds of un to LAM bit/sec. Separately Comnullarm information Services announced a commerpuserve information services announced a commer-

Convex joins massively parallel race

Consex Computer Corp. plans this week to iump into the massively parallel processing fray with the introduction of its Exemplar system, which supports up to 198 of Headert Packard Co.'s PA-7100 BISC microner 128 of Review-rackard Co. 5 Per 100 March confinenting and scientific applications, but Convex eventually hones to sell it to commercial information systems en-

Office for Power Mac debuts

crosoft Corp. will announce today that it will ship Power Marietosh versions of its Office 4.0 annications mile as well as Works and Propro, this summer. It will also shin a version of Office 4.0 for 686x0-based Macintoches in the same time frame, a company offiatal said

FCC rules for caller privacy

The Federal Communications Commission last week adopted rules for the interstate transmission of caller numbers to computer-integrated telephone evitems, such as those for retrieving customer files. The rules to take effect in April 1995, require free percall blocking for consumers who request privacy. Alon the rease or sale of the number will be prohibited without the quetomor's consent

Pint-size point of sale

realth of Virginia's Department of Al-The Common sobol Reserve Control has issued a \$7.8 million contract to Digital Equipment Corp. to replace its present cash register system with a point-of-sale network Under terms of the agreement, Digital will prowide more than 600 DECross terminals and software to to support the network

ASK and you shall receive

The ASE Grown Inc has negotiated a "standstill rement" with its two largest creditors that lets the Spannially broubled firm draw money against existing loans, even though its cash on band falls below specified levels at the banks. ASK said last week, ASK bas in days to prepare a financial management plan accontable to the creditors or they will deem ASK in viclation of the loan covenants.

SHORT TAKES The state of Washington has selected Chicam-based Anderson Consulting to design the information system for the state's beath cure reform initiative Transace Corp. is expected to announce that it will support Windows clients in its Encine transaction processing product line for distributed compating. ... As expected, Hewlett-Packard Co. unveiled a high-end addition to its NetServer family, as well as cohancements to its midrange model ... Wiltol International, Inc. in Tules, Okin, last week inked an agreement with Cuba's national telephone company to provide the first über-optic telecommunications link between Cuha and the U.S.

X/Open moves beyond Unix mission

Users gaining influence setting priorities for open system specs

De lane C Desarra

- Freed - inh the manager hilling of putting their stamp of approval s growing list of Unix and open ficials last week stressed the

need to broaden the consortium's eed to proaden the consorbum's ase of support among users and others avantage "first to be able to survive in the

environment we have today you can't be a dinesant You've set to change. You've got to adapt." said Benis Brown, chairman of the Y Ones HerrCouncil at an X/Ones conference here. Brown is general marager at systems integrator PRC Inc's integrated document me. s miegrates occurrent X/Open's spring to survive and promper it has to be in a constant

reinvention mode." A beautier from an enteresismide plat forms - beyond Unix is increasingly immortant to some yoral

user council mento the Dockton Ro. autrements Tutiles George "wo're all for one set of services for all environments

said Geoff Course, an open standards manager at Shell Interna tionale Petroleum Maatschappij B.V. in The Harme Nother, lands, "It's interoperability, whether some

one's sitting in front of Wipdown or Heir or a Macintosh Users have steadily gained influence sa V/Deen a \$18 million non profit firm based in Reading, Eng-

land shifted to a user-driven requirements process just over a war son The requirements process is

former whom customers define their priorities and needs for open anytem products. The part sten is system products, the next step is our residers to tactor unite requirements into uses

"It's very positive. The Ton 20 items on the apply plan come from the mers rather than the individund manufacturers " said one Britich gevernment aser, who asked not to be identified "If you look at not to be identified. If you look of ically looking at a broader definition of what open protests are including PCs and Unix."

Y Choose is comfortunes wave to and wonders and mapes to found its activities. For example, X/Open Chief Technical Officer Miles I am. hast said wandow that sim on for "fest-track" certification will be first in line for testing "If you've got a

cetion that you think can be fasttencked we're non nesed to disset so that "I ambout said December distall ated at the confer ence reveal that too

as IBM and Digital Feelment Com. management, includ ing Y/Onen Chief Exich pay about Scin movements and ecutive Officer Geoff Morris are discuss where half corporate ing assert ways to harden the stee culture under dard-setting body's mission beyond Unix Som Su avoto - including the possi

bility of becoming a for smolls entrope tion. But an X/Open spokesman in. sisted. "It has never been our intention to become a foremula

componition ' office outside discussion in home one we possionate the page of outtingell parts of the industry to particinate," said Bob Lewin, vice president of marketing operations at X/Open. "We want to establish

value-added programs for a rea-

sonable life to that users and ve The will runing constant be constanted.

appearant of information systems Concesse of the micros systems have been able to express them. ente process sunt into effact 15 months are " said John Minter a near from Inland Revonne's information technology of fine in Telford England "Now there is a continuous process for



ere said although it is bard to say what shape it will take as other Unix standards bodies recovenize ICW March 71 During the past oner X/Open has defined its role as that of motome integral or for open materia componente rengino from operating systems to application programming interfaces (API) to objects (see box)

Pilled It on Industry analysis said X/Onen is

forced to seek more funding as demands grow on its 0)-member steff to certify and test all Unix competibility standards such as the new Spec 1170 APIs for Unix operating systems, the Common Onen Software Environment's Common Desktop Environment in terfaces and the Open Software Foundation's Distributed Computing Environment. But X/Open has no plans to expand its core staff, spokesman Jeff Hansen said.

They'm in denour of teking on to much " unid Davi McCookin o Unix analyst at Gartner Grou Inc in Sente Clara, Celif., who did not attend the X/Open conferen X/Onen wants to give users more of a say, he said, to gain "a groundswell of user support that would allow them to really do an excellent job on all the things they've undertaken."

Standing by its brands

sides" sur

\$22 convents

COpen is ready to deliver on i mise to "brand" three key poncets of the OSF's DCE this year, said Mike Lambert, X/Open's chief technical office After testing for interoperab

ity among open systems platforms, X/Open plans to brand DCE's Remote Procedure Call. Time Service API and Directory Complete ADE Y/Open plans plans

et (OSD) APIa s X.400 Mall's elec change me

But X/Open executives or phasized that the firm will r spend resources d work under way at other si

sald X/Open will act as e or Ambitantom it

.... Jame S Bormon

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DEC catching up with beefed up PC servers

Ry Cralet Steelman

Today to have many than a hit player in the PC seems market Digital Equipment Com plans this work to debut a bulked up line of file and print servers. hullt around Intel Corn's Bentium chin and the Perinheral Component Interconneed (DCT) here

-b- Dill brown in the in-

and the second control of the second control of the they still need features such as better a removed to exactly be a throat to the likes of Compan Committee Care Linear measurable armein name of Distriction of the

grou spricing. file and print engines will be followed by

a series of remium-based approaches Servers beat that I stock that there are such as sense connecting code memory archival storage and hot-swapping of peninhands according to executives from

The new DECtor XI. Server family with The new DECRE AL Server samily was _____ distriction on you can track integration as is

And only DRIKM offers 20 houses Commit

Distracts BC soil

"Hut they haven't really caught on on the curses surt " Digital has more work to do curve yet. Ingutal has more work to do elore it can match market leaders such es Compao, he added. Steve Petrofeky Digital's PC product manager, said capabilities for

less money compared with the older DECas Of compared with the louder DELANCE OF SERVERS, THE DIS WERE BASInee in the market said Chuck Von-

ter an analyst at Meta Green, Inc. in

then they have in the past " Wester said

Wortnort Conn Printed access to be "deing a better inb

managing distributed DECne XI, systems from a single machine are under develonment. The management software and add-in boards for the remote servers about dahin in July he said Digital also has to overcome a nerce

tion among some users that its DCs are on the expensive side "From the digging Frontone they're a little hit priore" said Brian Ritherger, network engineer in publishing envious at the Secremento Rec newspaper in Sacramento, Calif. The flee more Digital's Pathworks LAN

software but has shied away from its DCs Ditherms and The newspaper day. amelia harre DC company from Company at though Rithermy said he will at least look at the DECne XLs.

Better deal elsewhere

Steve Ruger, MIS manager at Smith fadustries I td. on concensor firm in Mal. were Pa that uses a VAX server for its Pathworks network, said he would exnext to get better prices on a PC server from Compan or Dell Computer Corn

Hardware pricing on the DECoc XL Server line starts at \$3,699 for a 66-MHz \$96DX2-based model with 8M bytes of memory and a 535M-byte Past SCSI disk drive a 60-MHz Pentium machine with 16M bytes of memory costs \$4,699. Those prices are "within reason but not esperially agreeouse "Venter said

However, Brad Day, an analyst at Determent Inc in Framingham Mass said Diettal's internal production of PCf chip sets and storage devices should eventually give the vendor cost advanisses after the server line is completed in the fall and volume begins to increase

"From a product point of view f think there're connected all the right date " Day said "They're new to the server same. but they're going to be a very strong player" Digital's support for 11 server and network operating systems is the most extensive of any full-service PC vendor. be noted.

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proving indicate while to high-level decision from data from current operational and locally makers New hei taken Winehouse Manager one sten further making is fully consentible with IBM. HP DEC. NCR and most other senes running Oracle School DR2 and Rullick declare Workers Manuer work dozug oper-

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users into avenible historical information. Den is unconstituily extracted commarized and accommend that bodad into either a mainframe or server environment

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Microsoft's Harmon used to distribute software manage PC-related costs

Du Pd Consorti

Informat Company Comp has signed a deal with Microsoft Corp. and several other with Microsoft Corp. and several order ment comiene including deb al actionne distribution - to multinaAt the center of the deal is Mirrosoft's

uncoming Hermes system-level softupcoming nermes systemsever somware, waste reportedly reso information avatema managers distribute and mansystems danagers distribute and manfrom a central location. The surresment

was decisioned to other Hormon a market. and boost when it becomes evaluable estime in the spoond our flor

"This initiative will enable MIS directors to regain control over worldwide distribution of new software annies tions and equipment "said Jose Collaro.

totaneth shakeman and shief examples infonet's chairman and chief executive seer. In reality, we are providing juice managers w

Also low is the fact that the cominter should give IS managery better control of about 75% of the total costs involved in about 75% of the total costs involved in research conducted by Gartner Gronn. les is Stanford Cons

"Nie hous research that save each anwe have research that says each ap-\$167 a year to install maintain and snnmost But them is a stronglast cost assets ated with that " said Dan Sheller wood. and manager at Microcoff's enterprise group. That growing cost "could be significantly reduced if you have a systems management product like Hermes

In addition to distributing antware. Homes mustbe IV medersionals with complete inventory software management, troubleshooting and performance menament took for microcomputers

Added value key While interested, some IS professionals

said they will wait to see what value Infonet brings Hermes over and above what they could get from Microsoft before hovin ginto the common Material will have to being some more

goodies to the table for Bermes: otherwise I can just buy it from Microsoft. anid Don Flanders on IS menous at a large corporate account in Gaithers. burg. Md. "We also want to see what Hermes looks like in finished form before we make any port of decision " infonet executives responded that

they will supply Hermes with additional value through a worldwide network accossible in 150 countries. "We can give [Hermes] real global con pections to the multinationals to install

and manage [software] licenses," said Antenio luman an infanct executive. "It is the missing link, since we all downsized off mainframes only to discover we conid no longer manage our desktops." ISdenartments can use Infonct's wide-

area network services to receive their PC-based software and then distribute it to their worldwide offices. They can also use intenet's etobally managed infoLAN for faster LAN-to-WAN com or the company's worldwide Public or Virtual Private Data Network Services, a spokesman said

Resides Infonet and Microsoft other companies involved in the deal include Software Spectrum, Inc. in Garland. Texas, and software distributor Corporate Software, Inc. in Canton, Mass.

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Power Macintosh" commuters are here The new family of Macintosh computers with PrwerPC chins run virtually all Macintosh system-based software and most current programs for MS-DOS and Windows operating systems. So whatever computing environment you're working in now

you can migrate to a more powerful deskton

computer without losing your investment in your current software

But the real hanafit of the new Preser Macintosh computers can be seen with new applications that take advantage of the ProverPC chink advanced canabilities -

These applications, often called native applications, will offer two to four times the performance of programs available for the factort Macintoch commuters Inday

Developers writing native applications also report that these applications perform at levels better than their Windows counterparts running on Intel Pentium system based mmnuters

Major developers on board.

Right now the world's leading develoners are undating their most popular and memory-intensive programs to take fulladvantage of Power Macintosh computers.

In fact. Annie has been working closely with more than 200 major third-party developers since 1992 to create powerful new versions of their applications.

And since software development kits became widely available in lanuary, hundreds of additional developers have begin the move to Power Macintosh computers.

PowerPC technology enables them to build unprecedented speed and functionality into applications for the Macintosh system. Developers everywhere are easer to exploit these new canabilities.

Do more in less time

What do the advanced canabilities of native applications mean to you? You'll enend significantly less time waiting for your computer to redraw or recalculate or re-arrithme. That means wou'll have more time to create and refine your work.

to anniv new concents, to test options. You can also expect to see new kinds of applications -software that is both more intelligent and easier to use.

Developers will be exploring new features in areas such as intelligent help. 3-D. design video animation speech recognition and text-to-speech conversion.

Many of these new functions simply wouldn't be practical without the superior processing canabilities of a RISC chin and innovative Macintosh technology

46 Dimensis roomio Solutiono Adobe Soft Findous Adobe Blashubor Adobe Photoshop Adobe Premiere Halas Pretiland Adas RageMaber Expe Aticrosoft Word

What about softman?

A Preser Marietash will run circually

all of your engine Macintush restore-

haved programs. The real benefit

of a Marintud with PowerPC Archnol-

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committed to take advantage of the

new chibit advanced catabilities Here one some of the motive others

tions that are available now or will

he out in the next fear morabe.

Alize Clark

Constinte Fractal Design

Why RISC?

The new Power Macintosh computers are the first personal computers with RISC (Reduced Instruction Set Computing) chips -ultra high performance chips previously available only in workstations.

(In fact, many workstation developers are now writing applications for the Macintosh platform for the first time.)

RISC chins are smaller and less complex than comparably powered CISC chips. So they cost less to produce. Which means that Power Macintosh computers offer a significant advantage in price as well as performance. In the best of all possible worlds. all personal computers would offer you

this kind of power. The power to be your best!



75MHz.



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 Pre-metalled software DOS, Wardons for Workgroups Window Sound Street," Run Time and Video for Vinker, and Index "vales





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Enim CUCA methics torounced in 756 consideration on Technics simil 9.5° diagonal color TFT-JCD come matrix disting



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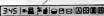
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Durk PCMCIA extension dos. Type II and an oversized Type IIIa library construction and the same shoot busiess firethire



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in marting and two may primitive man

as paging and two-day willed their Com-

saging service from Ratio man Corp.,

will run over the Argis wireless net-

Madagain has dearn fine fondered for

to build several types of personal com-

municators but Christophus Galvin

Motorole's president and chief course.

in a officer defended the decision say

ing "the wonderful thing about rom.

natural he edded because it nome

unclear which one will prove to be the

Separately Antis not its Personal Mail

Celerites Technologies Ltd. demon

MNDth Coloritus President Glenn R

Ray said using this method can in

crease throughput from 400 to 7,400

characters per second using a 14.6

hit/see modem Coloritas has three li-

consees: Toshiba Corp., Megabertz

Corn and Parific Bell Telephone

page SS. IBM's PDA strategy, page to.

IBM's RS/6000 laptop allows users to take AIX on the road

singlians is that exemplanty has

Con encenting contem

. Almahi

different needs."

hast open time

Mobile '94 offers reality check

D) MICHAELL HA

Widowana days of intermedian windows communications is further off then an ticinated last year. That is because today's wireless networks Ardis and BAM Mobile Data, are expensive and alternativos such as Cellniar Digital Perfect Data (CDPD) are encountering

That reality brought a comber group of vendors to Mobile '94 here just week

of reagons to moone or nere uses week - future that are a ruture that spcompound with the hyne and hoonin of

"What's ming on hone is exembody mere in everyous Microsoft they're all scared of ening in the proper direction " - ouig Mary Meeker an an-

alvet at Morren Stanley and Co. The winner is... The weed or commun. nity now under

etands is will take elemificantly league to establish the winner in the wireless communications market Meeker said As an example, she cited the difficulty a panel of wendows had defining per sonal communications services (PCS). one of the most varieted next regers. tien missless semiless

Motocola's Forms handheld

debuted with third-next a remove

"People are sobered," said Ken Dulaney an analyst at Gartner Group, Inc.

Some of the sobriety stems form do. lays in implementing CDPD at its main

proposent McCaw Cellular Communiproponent, McCaw Cettuar Common cittions, use. sectaw is now

ontos benina in its puuss. business their rollouts Greet Otlan discount of principles date marketing at Ameritarh Cellular Services in Hoffman Frinter III said Ameritech will man Estates, III., Raid Ameritects will come with these major country ore in the

and two weeks Doesel College a Panific Telesis somne. ny is also testing CDRD in See Diom.

CDPD in San Deeps ned will appound a deployment sphere olo for all of Califor. nie in a counte of nounted out that

printed out the two piece more after in a new common. cialized package: \$69 per month for olietia sundor enoponetac resistor coby the Endered Commy take recognic Comstrated its new modern methodology which focuses on sending pure input I I a to Beat through phone lines rather than using anni market to two the extra normating sade such as renders - remains

too high for users to breadly adopt the But Paul Heller, principal of Heller Consulting in Boulder Colo predicted that even cutting service prices by 75%

would not sreatly drive usage been the networks and the relevant roll-There was little in the way of new

receiveds at the show although Moto-

The RS/8000 Model N40 Isotop is a full

function workstation, although its 256

color flat-panel display cannot show the full detail of a 1,250-by-1,624-about high

resolution eraphics image, Instead, it al-

piete stored image, pulling up sections to

tails IRM said.

into high-resolution dis-

plays to show all image de-

The lapton, which resem

bles IBM's ThinkPad is

based on the 56-MHz Pow-

erPC 601 RISC chip ICW.

Esh 981 and is achadoled to

ship on March 25. It has 16M

to 64M bytes of memory and

lower never to non and

garners support

In an effort to present size General Master Mi and Com last mark appoint tional support for its upcoming At Work olds operating excises from

Phone has reference summers - NEC Core tes C Ollusti & Co Phase Com and Ze ing. C. Ouvetti & Co., oner p Cor p. man av-Wie Ded devices Company Company

Corn Motorois and Toshiba Corn had al-Bruce Baker, present manager of Mi

pruce bases, generiu manager or m the of the state amonifice on the terror of -ton Rether he said each anndownish likely adopt a somewhat different an

tions that will run on WinPay! He own more moundivision said it tength deceion an application that will let WinPad neers

connect to Microsoft Mall These smelles comp

tion Trobustories - said they will not their applications to WinPad, addressing

For instance, Syware builds a date here access rendert and Nationalist tions to locations within enerific mo

Baker said WinPad-based machin will ship before the end of the year. homewore the declined to be more one.

- Michael Fitzgerald

Pan based wireless PCs on Conrail traits.

Microsoft's Win Pad

no WinPad

products that these companies might de-Microsoft also appon

ine Seltire Seltunge Inc. and Naviga-

The basic store of our Debug Guide on the plication that gives turn by turn direc-

Ry Jean S. Bozman

IBM's inptop version of the RS/6000 Unix workstation announced last week, will have its greatest impact on the current crop of IBM workstation users, industry analysis agreed. The 6.9-pound Unix workstation will enable users to take on gineering drawings and AIX applica tions from standard IBM PS/0000 workstations and

move them into the field. On the road

Early users said the laptop.

while pricey at \$12,000, lets them take AIX software apnlications on the road for the first time, "I don't see il as a replacement for the workstations," said Danny La-Blanc, a sales envineer al manufacturing software firm U.S. Data Corp. in Richardson, Texas.

now our salespeople can use it to demon strate software to customers."

view in full detail In the office, Model N40 can be plugged The laptop

The IBM PS Noon lanton workstation is priced at \$12 ppp for a unit with s6M bytes of memory such hotes albert dick concern and a firence for AIX 125 Ris manufactured by

Tudoole Technologies

340M bytes of storage. inc. in Austin, Texas, codesigned the RS/8000 lan

Tudnole Tacknologi too with IBM and manufac tures it as well. Tudoole also makes the \$10,000 SPARCbook 3 for users of Sun Microsystems, Inc. workstations. But several analysts said they do not expect Tudpole's SPARC and PowerFC units to compete in many user sites because IBM users tend to run AIX-sperifleandlications What you're huring is a

nortable vehicle for AIX said Michael Goulde, a senior consultant at Patricia Seybold Group in Boston.

ough each user gets a full lisened RS/8000's AIX 5.2.5 oper ating system, IBM reoverd some AIX mod

sace. For ex The PS/Sone lantee smill mor spie. IBM said it rereplace workstations word multiuser sur port and the Micro Channel device drivers

ladustry analysts expect RS/6000 users to buy the laptop mainly for field work sharing the unit by using removable Stiringh hard drives

"If you have five people in your group you can check it out, use your own I'm movable disk, and it's your system," expisined John Donovan, a sensor consultant at WorkGroup Technologies, Inc., a consulting firm in Hampton, N.H.

But single users, such as architects early or nothing to destillation can use the machin

to conduct field work morely mores sold "I do all of my slide

resentations on th computer now," said Ken Hill Je vice neco ideat of phan sales at PDX, Inc., a pharmacy software supplier in Port

Worth, Troops. Hill, who has had the unit for more than a month, uses an overhead projector to how op-screen graphics



Computer Industry

ert 12 to 15 months, r

sters The com ide at the end of 1901

EMC buys RAID maker

MC Corp. said it will buy ts of Array Techry Corp., a subsidiary adem Computers, Inc. my's RAID Level Stochnol. y will be used in a line of ix RAID devices that EMC ns to ship late this year. company said.

ed member. Acting CEO n B. Arnold was named irman ... Steven Wright rof The Dodg e replaces Frank Dodge ointed Joe DiGina so chief financial off d vice president of fi-

co ... General Ant inted Robe HyperDesk backs off CORBA

Ry Malinda, Carol Rallon

Win a surprise move, a struggling HyperDesk Corp. last week announced it is jettisoning its CORBA-compliant object request honker and laving off half of its 60 employees.

Company officials said the recommed prescripation will focus its encertor on mortar into the encurrant business. In that market energies on moving into the groupware outsiness, in that market. make some money, according to President

Horh Osher "Il became clear a while back that we couldn't make money in the CORRA business and (no) we started to accelerate activities in other erees "he evaluined

Other said a number of factors influenced the decision to abandon the company's flagshin product HyperDesk Distributed Object Management System (HD-DOMS), Since object request broker technology is fairly new Hyper-Deak enent a lot of time and money education and promoting. As a result, many accounts and development bits but did not dealer applications quickly enough. Other said.

Moreover, a lack of industry agreement about object standards has stymied the market to some extent by confusing developers, he said Currently the market is split between Microsoft Corn, with its Obsert Linking and Embedding and pourly all

other major systems vendors, which are supporting the Object Management Group's (OMG) Common Object Recurst Broker Architecture (CORBA). White large yendors such as IRM. Hendett-Packard Co. and Sup-

neofit. Hyperfieck a small third-party software developer in West. born Mass could not Osber said Novell. Inc. purchased a 10% equity in HyperDesk about a year ago and announced that Hyper Desk's HD-DOMS technology would be key to providing CORRA compliance for AppWare. But since

Soft, Inc. have deep pockets and could afford to wait to make a

their the messages from the Orea, Other-bases between system sometime provider nine occur ancear. For instance, we've one and OnenDoc which nees IRM's Distributed System Object Model to Openinoe, wanta asses as

ter CURBA compisance. strategy? Osber said HyperDesk shipped the first version of the product to Novell in December. HyperDesk will offer consulting adarise and continues if Novell requests it Novell officials said they

are in discussions with Hyper Desk to take contest of the tachnology and that they view this change in circumstance as an opportunity for more direct input

Other did commer and manner rating "Mu four is that four change in direction! will be used as a hammer against the OMG. We're still helievers in CORRA, and we believe in our technotices the control, and we beneve at our recir

Other third parties wither constitive CORRA. compliant products had similar fears and reemotted the HyperDeak departure

"It's had news because the market suffers when there are fewer players, and while livnerDeski may say there's no room for lindenendent software wordered in the object request broker market. It could just be sour

grapes on their part," said Annrai O'Toole, vice president of development at long Technologies Ltd. in Dublin levelently the market may just now be shifting according to othon third parties. David Curtis, abled technical officer at Expersoft

Corp., another object request broker vendor, said this quarter has been Expersoft's best ever "We're seeing a marked increase in the level of perionsness and

understanding on the part of developers." Curis said, "A year ago we were still struggling with people over vocabulary and defining the fundamental nature of what we do. Now we don't have to do that kind of missionery work. We can talk about what differenti-

Geoworks wins a reprieve

By Michael Fitzaterald

Geoworks, long a small-time player in the operating systems market, has a solid shot at a leading role now that Hewlett-Packard Co. and Novell. Inc. have taken a minority stake in the company, analysts said. Geoworks is the maker of an operating system for handheld computers The investments should rive a lift to

Geomorks which has been considered a dark borse, at best, in the race to capture part of the nascent market for an operating system for handbelds. "This makes Goos a contender," said

Kimbali Brown, an analyst at Dataquest, Inc in San Jose Calif He said Goos' turbtly written code allows it to run on inexpensive, low-power processors, which could lead to a high-volume market for sub-\$300

For example, HP said it would target this market after completing the deal. Analysts expect HP to build a new yersion of its 100LX handhold around Geos, perhaps featuring built-in Novell Nothbeen

commentality Thinking ahead HP thinks it has the next-gen-

eration calculator here," said William Lempesis, president of Lempesis Research in Pleasanton Calif.

Geoworks is best known for providing the operating sys-Ion boz tem in Zoomer, a personal digand Casio, Inc., and for supplying the oper-

Brian Panahertu Watch for Green in an interactine TV set.

called PT-9000 personal information assis test But Geoworks Chairman Brian Dogsherty hinted that the investments could lead to Geos appearing to an interactive television set-top box. "It's an interesting market. but all I can say for now in

watch that space," Dougherty said in a show-floor interview at Mibile 3d in San Jose Calif fact week He else said the nemitie

tions with HP and Novell had been under way for close to a year. Negotiations with Moto rola, Inc. to build a handheld based on Goos are opming be-

In addition to its new Euroy handheld, based on General Magic, Inc.'s Magic Cap operating system. Motorola has said it will build handbelds

ital assistant developed by Tandy Corp. around Apple Computer, Inc.'s Newt open ating system and Microsoft Corp.'s At Work ating system in a Sharp Corp. handheld for Handhelds.





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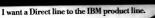


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It's about time

Score this as an unquestionable viotomy for the quetomor Score it further as a hold statement that today's environment is more customon driven - less venden deminated -than over before and getting

more so all the time Next week at UniForum the hig Univ loves in we should witness the long-conductor marker of various

Universations The end product of the merger is still being hammered out as you read this ICW March 71 And there is always a chance that the hure stakes and even huger egos could torpedo the menter although that doors't noom likely The small of the manner is to out an end to the redun-

dant and/or competing development efforts between the dominant Univ wwwna-hes, namely the Common Ones Software Euripeament (COSE) and the Ones Colores Constant of the Colores

Unix has a strange history. The heart of this once-technoid onenating system the hellmarks of which are portability and coalability was devaluated in the labs of ATAT long before AT&T gold it to Novell, which then more or loss deaded the Unix hrand to the independent Oliocarana ... A construction

on V.Onna Co. Over the years. Universityed into an entre. "standard" consisting of various incompatible flavors byped by different vendors in different camus. What Van Olsen once dubbed "anaka oil" became 'mystery oil."

So customers ant fed up. Two major studies - an by X/Open (CW, Dec. 5] and the other just released by International Data Group - indicated that customers are clearly coming their buying intentions away from Unix, Amazingly, they say they prefer Microsoft's Windows NT.

I say amazingly because with NT, there's so little "there" there Clearly costomers are voting for NT with a prayer, hoping that Microsoft has the clout and sheer muscle to make the proprietary NT an operating system standard. But customers more decidedly are voting against the confusion, chaos and general orass created by the mainstream Unix crowd. Ther've lived by the sword and now fear dying by it

The line vendors have been driven by the concern that delivering a unified Unix (with, say, common APIs for starters) would inhibit their ability to market differentiated products. That's nonsense, Despite the histant commodification of PC hardware vendors still manage to deliver differentiated products in that market. There's plenty of slbow room for innovation and differentiation in software.

What is needed for any agreement reached next week to work is a mass sublimation of egos at the var ions Unix providers. The greatest impetus for doing just that is coming loud and clear from the customers They are tired of your political squabbles. Unix is elearly under the gum and in trouble.





bouning their private and political

lives from a covernment that is nf-

ten introcated in eavordmenning

Consider the movement's non-

posed Clipper program. It would

let the answerment unacremble

can commented message if a lader

ancroves the action. Judging from

the way the government has been

able to set its way with indees

when it was interested in setting

up domestic spring projects. It is

to our advantage to restrain it --

and anyone else - from being able

Ellis Booker's sounding of the

'nrivacy alarm" misses an impor

to pry into people's lives

on them

Privacy concerns no 'silly' matter

Filis Bookee care that concorns shout privacy on the information highway are "silly" f"Getting to know you." Viewnoint. Feb. 21). Then he may on to say that lows. taken and voluntary programs will permit consumers to limit diclosure of their information and

that many marketors already have voluntary codes of fair information practices. What in the world does he think privacy advocates. have been after?

The "xilly" part of his column is that it assumes that the informs. tion highway will be predominanttoo age of a to produce fact name of the information date superhighway was supposed to be information. If it becomes a 500channel sales medium and not an information transfer medium all the privacy protections in the world won't matter.

Robert Fills Smith Privacy Journal Decoddence B !

I strongly disagree with Ellis Booker's characterization of the privacy concerns about the information highway as "siffy." He may have no qualms about anyone and everyone knowing when he orders Citizen Kane, but you would get quite a different reaction from a leshian in the Midwest, let's say. who orders Claire of the Moon

You may not have your job threatened when your private life becomes public property, but for the 80% of my men and lechians in this country who have no civil rights protection, the concern is

Marianne G. C. Seggerman Storeford Come

A deskton Ellis Booker completely miss dream the fact that the privacy issue is of concern to citizens. The difference is that citizens are interested in

rethen 15 years 16 of the love about d

tant point. With the coming of the information highway, people will have access to even more data about individual Americans than must before. It is year, important to guard against misuse of that data. The military has a term for guarding that kind of data; operational security. It involves securing bits of data that taken sees

Ioni Dahari

Son Promotors

rately don't mean much but that taken as a whole can lead to info mation that shouldn't be disaloned The hallmarks of American society are the freedoms of speech and the press The alarmists serve to keep such concerns in the minds of those empowered to assure that they can't easily come true.

Huber Heights, Ohio

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Consolidation makes sense

Jeffrey M Kanlan and Ellen Kitzis

number of market research and consulting firms are advising users to take advantage of today's house's market to craft the hest nossible market to crist the best possane They recommend breaking these complete into individual nicese and busing from the lowest hidder. While we can't fault the flame for their mod intentions, we do overtion whether this approach makes sense

in the leasures The theory behind the advice steps like this: Paris maintenance comings have become a commedity just like the conforment being fixed. and because them are plenty of communies to choose from users should nick the free willing

to give the best deal at the lowest price. Desoite some fundamental truths in this beard of action. Datament research prevals that the buyer must still beware. Strictly sepa noting basic fix it services from value-added services competeds the administrative hurdee and minted costs of managing multiple vendor relationships. Under this strategy is customer must evaluate a loog list of vendors for each jevel of support - a tediors and time-

consuming chare

By separating these functions artificially just to save money eustomers may be costing themselves more. They out themselves in the middle of amblem identification and vendor dispatch situations that can lead to extended

contem describes and lost productivity The femore unusbone area uses the last finates. minting you will use Our respand shows a promise number of contempor would revier to reduce the number of vendors they deal with Surjectance 4/96 of the more than 300 IS and Tot assessment, 40 ross

command by Datamed in the IIS would needer to use a single firm to handle Sair multiwarder andwork support to

An added benefit or a vertically interrat at concept to but ing support services

is the potential synarm created between the sustamer and the weeder Awardorwith

functions artificially just to save money customers may he costing themselves more. a broad view of a mintomer's operation is better able to promose proimprove system performance

active measures to prevent costly failures and In an one when environers are until inf "solutions" rather than "systems" to resolve their business needs, creating a seamless support estationable with becaused on its important

Bu separating support

The arthine offered by some consultants to nley hardhall with weaturs when it comes to

service agreements has found a recentive audience because many yendors have falled to ment austomes expectations. Despite the poor track entrant of come medan entranen should be cautious about driving too touch a

Given today's envinonnest come verdors may be willing to sion a harmhones to sign a pare-sones that would be unnext. trable if executed as conseined in the

hopes of wipsing popes or winning ernling additional charges for corriers not covered by 4be contract This type of contract this type of tined to leave both norther disease before

Costomers should be discerning. They have more options available than ever before, but they need to stay focused on their primary reamountabilities. Trying to purchase individual service components piece by piece may result

in lesion sight of the total picture. Various in discussion and Vitain levilon provident of Dalas quest, loc. 'n Worldwide Services Group.

Betas going bye-bye?

Michael Schrage adequate retorns from their technology investmonte a necessarios case conid be made for sto-

vpothesis: The quality of enterprisewide systems software is going to deamatically decline or become radically more expensive. Why? Recense circumstances are

conspiring to erase a crucial multihillion subsidy the software industry has exploited and enjoyed for years. That subsidy is the beta Unless

there are

changes in bela

economics, toe

are in for an

bugs and plag

change for an early shot at what vendors claim is a cutting edge system, the hrightest software minds in corporate America commit themselves and their numeronies to boose

ing bets sites. The IBMs. Oracles and Digitals essentially get their customers to enhance, debut and refine their systems for free. Anybody care to tote up the man-baurs re-

ouired to be a beta? Anybody care to examine the opportunity costs? The hard-dollar expenditures? The real cost/benefits? Back when informatino technology hudgets

were growing like kudzu and top management actually believed their companies were getting

ing beta. The company could get a technical edge on the competition; the propellerheads in IS could feel they were doing state-of-the-art software (good for morale); and vendors tended to be more responsive to beta sites. Those were the good old days. Today, every

body's uoder far

greater pressure to do more in less time. If IS isn'theiar deceptralined it's being outsourced. Budgets are being fromm or reachesed down, Programmers are being held more account able for their productheir Computer sportd's SULVENE

show that data prouing departments are much less enthusis tic about investing in innovation than before. The existing beta site model is simply not

compatible with this environment. A data proceesing manager may want to commit his people to being a beta, but it's difficult to imagine a CiO explaining the economies of that commitment to the management committee. Where's the payback? Do the economic and competitive

nesits of being a beta truly outweigh the costs? Innovation is wonderful, but in an era of downsizing rightstalog and restructuring 11's going to take a distant second behind manage ing that elient/server transition

Smoot nursely on annedotal evidence, it's set ting harder for the big firms to get the best com panies to be beta sites. They have their own problems. And as the level of system complexity rises, the need for better betas also rises Unless vendors are prepared to pay hard cash or (galp) offer royalties for codevelopment, the repposite incentive for being a beta simply inn't there As a direct result the quality of sys tems software has no where to go but down.

To be sure this wan't be a problem for small retems software. It's easy for vendors to distribute thousands of bels disks. Besides, if you were evnical, you could make a decent case that Release 1.0 of such a product is a beta version anyway. These suppliers depend on their customers to dotheir debugging for them

But onless there are fundamental chan in beta economics for larger systems, we are in for an infestation of bugs and plagues of delave. There's no such thing as a free lunch; there will be no such thing as a free beta site.

Schrage is a leftow at the MIT Steam School Center for Coordination Science and the MIT Media Lab. His Internet address to schrageof media-lab mit edit

GETTING SOFTWARE TO WORK GETTING PEOPLE TO WORK



Integrating five top-rated Windows** applications to work together as one was the big idea behind Lotus* SmartSuite*

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Office in many areas including its range of applica-

notably, in the technology for working together.

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retible source. ARRY HIGH-5 products exceed IA-566 Category 5 specifications, and every certified installation includes ARRY 15-year extended product warranty. The copper californ year centered by ARRY Bell tulorations and has become the bombon for the copies californ year centered to the control of the c

AT&T Network Systems And Bell Laboratories. Technologies For The Real World.



Little relief seen for color backlogs

Just as a fleshy new ways of high reston. e notebook computers hits the market vendors are offering a dreamy foreout for when rumby will match demand ton action material substantial Mont vendors said they will not reach their tent of meeting demand by the and of the third quarter which means prices for high-end notebooks will remain high.

The new notebook lines were snarred The new notegook times were spurred

tion levels. The shillty to add that kind of purpose without sportfeing bettern life. or power without sacrateag owners on

prompacan de Toshiba America Information Sys. tome inc and Towns Instruments Inc for instance will ship versions of their correct actabacits with the new china this coarter The innovative ITE Filte notebook from Compan Computer Com will ship in volume during the second

quarter/repeters/below)

office technology at Dayter HeighbCore one said that while Baxter typicalby her numbered from one main hardtrom one men hard leaning toward buy. ing other brands on a

But even the early

shippers acknowl-

not be able to estab

un with demand for thin film transistor

CPC) antehnolis in the third quarter in fact shortages may

manufact theretich 1000

for us. Most of on

solve ferre elecce and most want took

unid Class burners

continue to sendore

This is a real insue

spot basis to get the peeds. Jurmann also said passive-ma trix color acreens were a possible alternation for many Review mores, "but my

home to call found usered on at least look. Instat it " Color notebooks hot The share one heigh for its last he major

demand. BIS Strategic Decisions in Norwell. Mass. predicts that demand for color notebooks will rise 60% this year Will liam Ablondi, an analyst at the research

flow sold demand for TOTAL SAND DEGLARAN IO peodusts will cause his company to record its color notebook or timeter percond to decrine occurred in the Title of the market this



So The Se Con

4865¥ as for of Se ...

done refrand to speci do but the bestders which have been as long as six months in come creek are exnected to be less than Compan's LTE Filte

Vendors seknowi

ventors acames eaged that they would

nother matrix color

models, particularly those with Gille

screens or larger, un-

tillate in the year Nen

otebooks will in shade both Ricin and the searcer Bluin TFT color acreeus

I'm Harizon general manader of Compan's ess. said Compac could have supply issues on high-end note

books until early 1996. With the shortages, street prices are - mosted to some in high, up to \$6.500 for a model with a DX4 and a 540M bate hand drive Toshiba's T4800CT with a 510Mbute drive will list for as much as \$6 800. while TI's WinDX-75 with a 340M-byte

hand drive will start at \$4 coo. TFT color notebooks have been among

Color demand, page 41

Compag notebook among the Elite

IBM readies PDA quartet

Plans family of handheld digital products for '94

By Michael Fitzerrald CONVOL N.

IBM PC Co officials say they are confident that enough pieces of the technology puzzle will fall into place to warrant their entry into the personal digital assistant (PDA) market by year's end.

in recent interviews here, Joseph Formichelli general manager of mobile comouting, said the PC Co. plans to deliver at least one product so the market can "lough and feet" it Saving that "we want to do a family of

products, not a single device," Formichelli outlined a four-point strategy for handheld digital devices ·A desktop extension machine called a

repail information partner, or PIP It

would act as a telephone and a fax machine recognize handurities accept digital images and perform other data oriented functions: It would probably recomize speech.

·Small tablet-type devices designed for data entry and poving and aimed at upp. tical applications communications. These will differ from

Simon, the advanced cellular phone IBM is building for BellSouth Cellular Corp. Simon combines phone wireless fax paring electronic mail and personal information management functions in one dorina

*More OFM products like Simon If IRM one find austomen

That seems like a resu

said Dean McCarron, an analyst at Mercury Research in Scottadale, Ariz. They'll probably sell the most units of the vertical one, and the 'talk to' one will be what they use for the consumer market. The desktop extension will be the product that dies." McCarron explained

Microsoft Corp. and IBM are contin

to play their tactical same of cal and mouse. In the latest round, Microsoft has released a maintenance approace of Win down 3 1 that IRM officials said was deliberately designed to be incompatible with OS/2 for Windows, thereby undercutting OS/2's momentum. Change to the USFREVE and

VPail 900 EYE files in the mounth shipped Windows 3.11 may prevent 08/2 for Windows from running property, IBM officials said. They added that they have accornately identified the nature of those perisions and said they can integrate the needed changes and deliver a new ver-

sion of OS/2 for Windows in the spring The changes they have made are reiselv minor We can do what we need to

do in short order and be back to running 08/2 for Windows on anything they ship," said Wally Casey, director of marbeting at IBM's Personal Software Prod-PC Co., prage 40 nets group in Austin, Texas.

Windows 3.11 incompatibility angers IBM

vice drivers for Novell, Inc.'s NetWare. fingerprinting software that lets Misso. soft better track the piracy of Windows re code and a set of minor bur fixes.

wer sales sought?

IRM officials claim one of the must of Windows 7 11 mms to brook the momentturn of OS/2 for Windows by rendering it omnatible. IBM said it shipped about 300,000 copies of OS/2 for Windows from mid-November to Jan. I in the U.S. alone: the product has continued shipping at that pace since

"It is hard for me to believe they would put out a new release in order to add antininger things and device drivers that you can get free from bulletin boards. I think they are a little pervous about the acceptance" of OS/2 for Windows, Cases

Microsoft denied the charge. Aspokes person said the Windows 3.11 product was under development before Microsoft new any code in OS/2 for Windows.

Price tag hurts Pentium

By Michael Fitzgerald

Describe the mich by yandow to apposite says Despite the rash by vendors to announce sys-Onetion it come that Postium's day has not repairin,

lestend Intel's new high-end 488, the DX4. will hold away in the market natil Pentium besed systems dron in price according to user interviewed in procest weeks. Doors out they are awaiting a price drop to intel's proclaimed vear-end goal of \$2 coo.

"\$2 000 is the marie window for mass pur " said Gordon Summers PC coording onases," said Gorgon Summers, PC coordina-Cincinneti He said he would not have Pentium in

bulk antil it reaches that lower price. Win have this price/performance threshold of \$2 025 and we want to buy the most now we can get for that price " acrosed Street River feld, manager of customer services at Boos, Alion & Hamilton Inc's Cornorate Systems and

Technology Group in McLean, Va Some said Pentium systems are aires some that restam systems no arrest considering that the applications are very crit ical to a hospital's operation." said Wayne Polertune, a former information systems director who recently formed The Robertson Group, an IS consulting firm for bospitals in Fresno, Calif. Intel's pricing promises have analysts ore-

distings emission market turn to Participa "It's a desmatic shift " said Randal Giusto, an analyst at BIS Strategic Decisions in Norwell. Mass He said Pentium could outself the 1486 in 1995, a year earlier than previously expected Intel predicts that 20% of the market will have Specium assurance in the fourth awarter of this

Chin announcements

Here is a sample of Intel Pentium 60/5 puter announcements from jast week:

*Advanced Logic Research, Inc. — DX4
vorsion of ALR Revolution with 6th briss

of RAM and a 40006-brie hard disk available in May for \$3,357; due! Peprinss unsoor or may for to, sor; come rections ver-sion with SM bytes of RAM and 420M-byte hard disk, available in May for \$4 507 *AST Research Inc. - Prem I C 4/1007 seed on DX4 with SM bytes of RAM and LACAL bota hard disk available now for

SQ,720.

*Gateway 2000, Inc. — DX4-based P4D-100 with SM bytes of memory and a 540M-byte disk drive, available next month for \$2,796; Pentium-based P5-90 with 16M bytes of memory and a \$45M-byte disk tve, available in April for \$3,986. ning DX4, with 8M bytes of memory and a 4-byte disk drive, available in May for

\$2,700; Pentium-based Westra XU 5/90 act to the part of 2 th and 1994 byte hard to available in May for \$4 537 Notebooks based on 25/75-MHz DX4 *Company Computer Corp. — LTE Either with 510M bytes of disk storage, availab

in the second quarter for \$6.400. Gateway 2000 — Colorbook with SM bytes of memory and 25014-byte disk tre, gradiable next month for \$5,495 NEC Technologies, Inc. —Verus Forth 4M bytes of memory and a \$40% byte disk drive, available now for \$5.879.

IRM PC Co.

COMPANY IND PROM BACE SO shed be seen matchack computers nasticularly subnotcharle been

ting time wind out o Examinhalli continued that PDM Tot and this PDAs this man benews it remains unclear whether the communications and software comices peeded to make the denine matel will be in place by veer's and

> Communications needed Dista Different other handhold do. vices will probably continue to have little market impact without more stable communications networks such as Cellular Digital Packet Data better software and Pactor Dilla, Delver soliware

"It's going to be close If the marhat is there we'll definitely do it " Ect is there, we

PDAs rank third on Researched I's "Lodo" list for this year, falling behind meeting demand and bringing out follow-on products to has the mind set of the mile of current ThinkPad machines ICW

> ro. 28j. Formiehelli promised an undate to the high-end Think Park line an a constant company ion of the leaves neigned ThinkPade - which ann bute sell a major week point in lysts call a major weak point in m s portable offering — and an

Sept I Down diseases of man keling for IRM PC Co mobile hands added that IPM's malinto innerate on the hardware side of things and then bring in third-party innovations in software service and support for the ThinkPad such as broad-based voice recognition.

ThinkPad rates in popularity

Christopher Lindquist

Chalk one up for the little guy

stepped on one ant loo many and found a sucker with some teeth. Software ver dors small and large are quietly popping a tions to Stac Fleetropies which were

(at least until the appeal) a \$130 million award in its data-compression patent infringement soit against those allogedly light-fingered Microsofties.

Users on the the various networks expressed differing degrees of delight, anger and confusion. Some lauded Stac as the mouse that roared, while others compared it to firather larger rodent. More

than a couple were left wondering whether it was time to start stockpilling MS POC Circular to start the bound of on injure tion against its sale. Despite all the noise, at least one Com-

puServe user seemed to have it in peramentive: "Congratulations to Stac Electoniones its victory against Microsoft! At this mate Bill Center will be backe in 100. 200 veers

My kind of town... Microsoft seems to be having better luck

on the Midwestern front, namely Chicaen. The chatter on the Net shows that users are pretty pleased with the features and performance, though at least one user made a mod point. Why is Mirrough working so hard to get Chicago to run in AM hydes of memory

The over said. "It is really disappointing to me to bear that MS is gunning for that low memory area, I know, I know. most people still have only 4M bytes, and many systems still sell with 4M flytes i standard RAM. I'm just kind of flattened after all the media hype over the last two months, and all we're going to end up with is a slow sort-of-powerful (operating system). Hopefully [Microsoft] will release an upgrade or something that reonires more hardware for Chicago (there's a request you don't hear every dev!) so I can make real use of my t6M

livtes). We can't be leaning on the people who are just starting to realize what Windone 2 t is 1think (Mismontt) should move forward With this thinned-out Chi norm it "It he like two stone forward and

The Wahl lobby

Wheo is Windows not Windows? When it's Wahl of course Some Sun customers are complaining that they haven't repelied their Wabi kits vot. They'll have to wait a hit more according to Sun tech support. Anyone who sent in a request card before the end of 1993 should have a kit now The rest will have to wait until as late as April for a revised (and less bug-

Wahi wannabes aren't the only once waiting 05/2 peer-to-peer network beta testers have been feeling left up in the air for some time now. If info on the Compu-Serve PSPRETA forum in correct, they'll be waiting a while longer, too. According to an IRM sech supporter, the beta isn't doed streigst been in succeeded unimation for a while and could be for quite a while longer He said. "My personal view of this is that we have taken longer than we should to keep [peer-to-peer] going toward a reiense, and before we are done you will probably become even more impatient with us. I won't comment on the

remonsforthal here I hopethat when

the finel product comes out that you will all feel it was morth the wait

I hope so for his sake Oh, and here's something for prepara tion's paker If you want to port your OS/2 apps over to the Workplace OS on a Pow-erPC, the move is supposed to be pretty easy - if you're using nothing but 32-bit API calls. Touching a 16-bit API makes things a bit more hairy.

Your job's a joke Sometimes it nevs not to take your lob too seriously. Anyone interested in taking a break from reading the latest Net-Ware upgrade documentation might want to be us the lookout for a book called Humour the Computer by Andrew Devices due out from MIT Press later this year. Of course, we've known this

was a funny business all along. It's funny for some of us, at least. Pity the poor guy at Microsoft whose internet ess is billgis microsoft.com. No, it isn't Mr. Bill, just a regular employee with an unfortunate name (or an incredible

desire to get lots of useless and sometimes malignant E-mail). Lindouist is technical editor at Electronic Exteriniument magazine. He can be reached ein tronically through CompuServe 73361,260; MCI

Mall of 17150 Internet cheleformates to rom or America Outlineat ElecEnt

YES! I have some of the same questions as Rodney. Please send me my information pack. We are considering the implementation of client/server training in:

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Deskton Computing

Color backlogs

CONTRILIED PROM BACE 39

the few PC hardware products to maintoin relatively stable pricing and little colling off of the list refers. Despite high prices for the high-end outshooks and brate and there would be demand There is a hig market above the \$3,000

price point expecially in correctate price point, especially in corporate but at International Data Corn in Framingham Mass

But come come users who are used to paying a lot for cotebooks halked at the high-end pricing Those prices are too both — we have

a tough sell with [our current vendors] already" said Victor Mutnick, corporate vice president of information systems at New York 1 ifo Incurence Co.

New York Life agents now buy mainly

Briefs

Ti enables smaller notehooks at the esternation first details of its Rio Grande integrated processor a 496 class processor with the Peripheral Component Interconnect hus integrated into it. Rio Grande, a 3.3V chin, will also offer elock-doubling and an interested PCMCIA controller and will reduce the chip set necessary for notebook functions from five or six chins to three, making for smaller notebooks. It is expected to appear in subnotebooks and high-performance notebook sys-

Duracell has notebook battery The first fruits of Duracell, Inc.'s effort to offer standard off-the-shelf batteries fornotebooks appeared last week. The DR19 and DR31 are among the four Duracell rechargeable batteries the commany will offer. They are being used in Compag Computer Corp.'s new Aero bnotebook The DR19 costs \$99 and the DR31 costs \$169, Both are intended to be

sold through a variety of retail channels

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tome later this year



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amon a series to be to these outlies to NEC rectinologies, inc. 8 versa, water is priced at approximately 34,759 for 8 dainy The company shadows [Dis Think Pads when they are available.

unnders around that the cumply of highand newlects will be constrained wall in. to the fourth quarter, if not longer. The PCCo which may have the historical

Historia in deep water Officials from IRM PC Co. TI and other are also expanding their capacity.

matrix screens "well exceeds the cone.

bushless for soler nation-matrix machines has taken stress to improve its serves appear by signing a vet-to-be announced deal with an outside supplier. which common identified as Sham Com-ICW March 71. Sharp supplies nearly half the world's servers Share will nearly double its TET action metals canacity in the course of the year and other yendors

billion of the industry to supply those hinty of the industry to supply those dent of display products at Sharn Flordent of display products at anary elecin Comes Wesh Ritter said Sharn does not expect supply constraints to ease unand expect supply constraints to care much during the rest of 1984.

All vendors stressed that they were shipping more TFT active-matrix color could not keep up with demand







ollent/server H's best to have a well



partnership and the possibilities it held for the litture

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igrating to a client/server environment is a big step, but it doesn't have to be an unnerving experience. With proper training, and the right training partner, you organization can move smoothly forward ith the capabilities afforded by client/server. Through training, you will begin to recognize client/server's many benefits such as:

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TRAPPED IN THE BODY OF THIS TINY SER

This is a story about a small computer engineered to be so dependable, you wouldn't think twice about trusting it with your mission-critical anniliostoms. And to be this without filling a

approaches. And so or in without friend a closer, much less a room. If you haven't thought of Compaq as a business-critical platform before, kindly goal your blocks and begin. (We'll be crumming loss of information rito this od, which only makes some, given how much we fix more robul out viers.)

If there's one thing we've learned working with our customers, it's that you're running more and more mission-critical applications on your network. And if your network goes down, your busioess goes down. All of which should give you a better sense of why we built the Company Prol Lant servers.

Preliant is our family of affordable, high-performance and easy-to-manage servers engineered specifically to provide the high availability you need for mission-critical networks. We've designed ProLouti in three different models, ranging from a single-processor configuration to a four-Portum neococcup model.

Now, how can you be sure our server is truly a minacle and not a minage? To begin with, there's Full Spectrum Fault Management, provided by Compag Insight Manager technology and

software that centinually montres over 800 aspects of the server's operating status. (For example, Drive Parameter Tracking checks 15 hard-drive parameters), All of their information is constantly gathered, analyzed and then used to prevent, tolerate or recover from system problems.

If the performance of a monitored component drops below a specified level, our unsque Prefurlane Warmany* kocks in. We'll actually replace a Compaq warranted drive or memory system free. Before it stops working. No downtime. Enigang cash registers, Happy box. Still, no network's perfect. In the unlikely event a problem occurs, our servers exhibit remarkable colerance. Every Prolsant includes Compagdesigned hot-plaggable drives. Prolsant Models 2000 and 4000 cone standard with advanced error-correcting memory and off-line backup processor features (whereby the server reboots features).

automatically to a second processor). And, most notably, the Campaq Smart SCSI Array Controller together with the Proliant Storage System ensures mission-circural data integrity. Should a network problem bring the server down, the Rapid Recovery Systems of the Proliant are designed to bring it back by.

VER IS A MAINFRAME WITH AN ATTITUDE.



For example, Automatic Serier Recovery 2 uses a historical record of serier status and performance to perform an astonishing array of tasks. Like melhignetly seatoring the serier, automatically correcting a variety of problems, and occessing a telephone pager to contoct network administrators. By now you'd expect us to hore rethought server setup, configuration and OS installation, but you might be surprised by the results. SmartSwert is a CD-ROM system that takes the headache out of gatting your server up and running. Prolisms includes to CD-ROM drive and bundled CDs of apsumand Netwert and other major operating systems. To get hooked upto your network operating systems, snoply call your dealine from a cocta cocks, enter it, smoore a few operations, once it, smoore a few operations, offen you've enjoyed or cup for fee. fee and a pith deame you'll return to find on integrated Of fully smalled and operational for increased performance and impresed major, mace, find we'll keep you updated us CD when now operating the similar termine appoint.

And Jindly, to accompany our new hint of mistina-critical terries, we're introducing against circulal support. With Palakan, we new differentiation and serter through our Companion and serter through our Companion. System Remove System Parents, which group adjusts most yours expert holded (Formage raighers, More on one choice 4-later on the sectiony regime supports—during from Companion, from our major for failure. Without, and of course, and Companion on the site of years or with section of the section of the section of memory, and 7-day o-mech, 24 hourse adpression of the section of the section of memory. and 7-day o-mech, 24 hourse adpression of the section o

All in a surprisingly small box for not a whole lot of money. In fact, a DX2/66 Compaq ProLiant 1000 starts at about \$6000.

Which may help to explore the look pair has igner you when he heart hos much meany jour's assert attented elements.

The special figure and a that. If you will get used a transit of the late with the transit of the late with the transit of the late mere in model, framer and geographicates information about our Prolasest series inmodularly via far, all you have to about the late of the late of the late of late o

COMPAG



THE COMPAQ PROLIANT MISSION-CRITICAL SERVERS

	ProLiant 1000	ProLiant 2000	ProLiant 4000
H	IGH PERFORMANCE!	SLIWORK SLRVERS	
Processor	Intel DX2/66 or Pentium 60MHz	Intel DX2/66 or Pentium 66MHz	Intel DX2/66 or Pentium 66MHz
Architecture	Flex or TriFlex/PC One Processor	TriFlex with up to two symmetric processors	TriFlex with up to four symmetric processors
Network Interface	Up to 12 High-Speed Channels; NetFlex 2 with Packet Blaster Technology Standard		
Standard Disk Controller	Integrated Fast SCSI-2 and Smart SCSI Array Controller (selected models)		
Storage Capacity	550MB-112GB Internal/external	1050MB-140GB Internal/external	1050MB-140GB Internal/external
Typical Usage	Departmental network services—primarily NetWare	Departmental network application services— NetWare, NT and Unix	Application services for preemptive downsizing NT and Unix
Transaction Rating	50-150 TPS	200-300 TPS	300 400 TPS
Estimated Starting Street Prices	\$6,000	\$8,900	\$13,900
S11	RVER DIPENDABILITY	AND AVAILABILITY	
Management	Second-generation Compaq Insight Manager (standard) combines with innovative hardware design to constantly monitor, assess and report server health and performance		
Fault Prevention	Insight Manager alerts you to server status changes in over 800 component parameters, allowing proactive server management backed by 3-Year Pre-Failure Warranty		
Fault Talerance	Standard support for RAID levels 1, 4, 5; not pluggable drives; on-line spare drive; off-line backup processor's; advanced ECC RAM*		
Emile Barrana	Standard road recovery survives substitutely return server to full operational status		

	ICHY, EAST OF OWNERSHIP AND SUPPORT		
SmartStart	Standard CD-based intelligent hardware configuration and system software installation, pr viding simplified server configuration for Net Ware, NT or Unix. (CD-ROM drive standar		
System Warranty	Free Three-Year, On-Site Limited Warranty		
Pre-Fashure Warranty	Three-Year, On-Site Warranty replacement of designated components that fall below preestablished thresholds		
4-Hour Warranzy Response Upgrade	Optional Three-Year On-Site Warranty upgrade to 4-hour response		
Technical Support	Toll-free, 7 x 24 technical phone support from Compaq engineers		
CompaqCore System Partners	Highly trained, dedicated, third-party professionals who provide systems maintenance and comprehensive technical support		
QuickFind/PaqFax	Proactive notification and delivery of new technical information /7 x 24 fax response for updated specification, configuration and settings data		

COMPAQ.

(19) Congregationages in agreement from the control of the control

Voice recognition enters the mainstream



form 16.00 teets afto speces recogited to a cumher of vertical 10fmation Associati oer or vernear and acts and the second tops of them.

androf dollars But 1884 is showing up to be the year of the voice with Compac Computer Corn. tends Computer Inc. IPM and Microsoft

Corn all offering speech "command and steel" and "speech to text" systems touth of all a

Two weeks ago Dreater Statemy inc in Newton, Mass., pushed flown the price mint for DC-haved energh-la-layt systems Version 3 0 of Dragon's DragonDic-

tate product lamity includes pragounce tom that includes both software and a

tem that includes on "It's a significant price drap" --id John Oberteuffer, president of Vision Inremarine Associates a Lexington.

TOTAL - A A AND money works and IBM's own 5,000-word, voice-cod-trolled distation product VoiceTrue 2 to DOC austa \$2 105

Drame's speech recomition engine is an

industry leader and in the basis for branded offerings from IRM Comman

According to Mingles director of marketing for privately held Dragon Systems the market for PC-basid dictati has been broadening and new includes tom latesthic men

There exitems used to be for second

"These systems used to se for projec ting into moneral business use for neonle ting into general business use to In addition to the starter system. Drue

In addition to the starter system, aver-60 000-word distation product These meters and \$995 and \$1.995 region. Designa's dictation products our

pragon a niciation products currently rea under my bood on woo dated to half minimum of 2964 bytes of hard disk

December also solle TalleTo a constrate product for Windows, but that system poorts only voice commands for key hard and manus controls. Drawn said it plans a Windows hased dictation eveThe automatic speech-recognition market i expected to grow to at least four times its size by 1997 thanks to powerful algorithms and 1984 and 496 Dry



Recon America Inc. has introduced Ace Vote 500C on enhanced passive matronsector, and consector, posterior According to the Torrance, Calif. com-

nearly the product wrights 5.5 pounds Autombre 5000 is posileble in 80M-120M. or 130M-bote hard disk drive con. Separations with one 3th in 1 44M-bate Boony disk drive and 4M bytes of RAM ex-

nendable to SM bates Users have the ontion of including of ther a 2.4K/9.6K bit/sec. or 14.4K/14.4K hit has date flow modern

Aution Note 500C color notehook prices range from \$1,999 for the 80M-byte verelon to \$2 199 for the 180M-byte version.

b Doson tmanior (310) 782-0770

Triton Technologies, Inc. has apered CoSession for Windows 1.0. re-According to the Iselin, N.J., company,

CoSession for Windows employs memo ry management and multitasking feaures to support enhanced background operations, multiple connections and support for the remote operation of both DOS and Windows programs. The product uses a compressi

nology that reduces the amount of data transmitted over telephone lines and decreases the processing time required to compress the data. CoSession for Win dows adds a remote access capability that is implemented through disk drive redirection. The drive redirection coables a neer to run programs locally and access files from a distant PC or LAN.

CoSession for Windows also offers a driver technology that climinates the need for special video or mouse drivers to sun Windows programs remotely

A two-PC nackage costs \$199 and includes bost and remote software. Addi-

tional host and remote packages are evallable for \$129 Periton Trob

P Tritton Tech Caere Corp. has introduced OmniPure Designational S.O. noticed character me.

omition (OCR) software for Windows Assorting to the Low Gates Calif. comnany the product offers advanced three. meional OCR technology and comniete compound document processing with its True Para technology

True Page provides a true WYNTWYS formatting option with the ability to capture display edit and save the content and format for a complete name in grandics and text applications.

OmniPum Professional 5.0 employs the Caere 3D AnyFoot technology, consisting of a Compound Neural System.

Caere AnyFax 2.0 technology and a Lanmuser Analyst OmniPage Professional costs \$886 Carre (400) 205-7000

Capsoft Development Corp. has introduced HotDoos a software tool that builds intelligent templates from Microsoft Corn's Word, WordPerfect Corn's WordPerfect and Lotus Development

Corn's Ami Prodom According to the Provo, Utah, company the software converts word processing documents into smart templates that

reduce the time aser's spend producing repetitive, routine business documents. Pratures include numeric answer range validation, optional formatting, matic search and replace, blockand-click variable insertion, backward and forward movement, drag-and-drop script building, a drag-and-drop dialog builder utility and repeating variable functionality

HotDoos is available for \$49. Capsoft Development Corp. (901) 975 6560

Central Point Software, Inc. has announced PC Tools 2.0 for Windows, a product designed to improve Windo

reliability, give users greater control over their system and boost Windows

perfeamance According to the Beaverton, Ore. com nany Version 2.0 includes CraphGoard a surface monitor that provides an early warning to amid Windows Croshes and an enhanced System Consultant that

provides self-implementing configura-This version also features supsubleSpace drives, cohanced file and desistant management and expanded nor ction against virtues The product also

offers mer-customizable tool har sunmet for drag and drop operations Central Point Software

PC Tools 2.0 for Windows costs \$180 (503) 690-8058

(714) 753 500k

Olympus Image Systems, Inc. has in-treduced the ParePlex 24 and ParePlex 16 namer printers The PamPley 74. name-one-minute model provides high performance network connectivity and performance network connectivity and technology and a RISC-based proc mahie controller. The Page Pley 24 tar gets bigber-production networked printing environments. The 18-nage-berminute PamePley 15 offers an assorting of paper-bandling features for deakto ing applications in smaller offic and worksroups. Cost. \$6,285 for the PamPley 24 and \$3.885 for the PamPlex 19 Olympus Image Systems Invine Calif

Wrestling the vi monster while migrating from an iBM mainframe to Unix? Win the fight with help from uni-XEDIT. uni-REXX and uni-SPF.



hen a few engineers at Microsoft set out to write Windows NT; they sat down with many cups of coffee, and computers built around the MIPS 84400° RISC microprocessor.

(No wonder: the NEC V_R4400 ⁻ MIPS processor is at the heart of some of the most powerful computers in the

During the next few years, they worked long and hard, missing quite a few dinners with their families and untold televised sporting events.

Today, Windows NT makes it possible for companies to run their enterprise software on a whole new class of dependable, affordable machines. Like the NEC Express RISCserver; direct descendant of the machines used to write NT itself. And it gives software developers, designers and engineers access to remarkable new tools like the NEC Image: RISCstation.

In short, a few engineers sat down. And the entire computing world leaped.

A river of coffee. A raft mag





Give people a better view, and the reviews will take care of themselves.

Words can't really describe the sharp, flicker-free images you'll see with IBU's new high res, non-interlaced monitors. But until you actually see these newest slipplays of technological leadership with your own eyes, read what the reviewers have had to say. "The IBM 17P will turn heads for its bright colors and crisp text...the price is right, too."



"[The 21P]...delivers an unwavering image...yielding excellent brightness a tight focus and solid colors."



BYTE

"The 17P was the clear winner for image quality in its class."



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***Tam-10pn M-F, tam-5pn Sat, EST GM is a registered trabment of the International Business Nationes Corporation 0 1904 IBM Corp.

LANG Scourne SOFTWARE FOR GROUPS

Workgroup Computing

SOUBOURNE TEAMS SOURCE LEWIS New paperiers 63

Microsoft ventures into repository realm

While observers say they will two to know an once mind about Microsoft Corn's unan open mind about Microsoft Corp. 8 up-(ASD) they are skentical about the need (ASD), they are samption of IBM's Report tors Manager Experienced analysis note

that one of the feilings of repositanias is that he nature then are compley and take a long time to build Duringthose long development cycles, the appligevelopment cycles, the appunoted to support often surpass them in conhection lon

th test or been to build comething like (the Repository Manager that by the time it arthe industry had changed to the point where it no longer had much prestical use" said Rich Finkeistein provident of Porformance Comnuting Inc. a consultancy in

analysts said they see some advantages to Microsoft's approach because the technologies will be medular and will technologies will be modular and will nearly as all announces indica the Repository Manager in what it supports.

Amount the benefits of a central reposi-



then emete new once to solve similar neoblems Microsoft officials said. A repository also can simplify development pository also can simplify development themselves and the much larger com plex applications that comprise the ob-

> "None on think of them as only In the case of this see that you are men for meeting! emplications such as banking and finance said one source families not the resident

With the retractions as a ren tral forus, other products, including computer-aided software engineering tools and name engineering toos and program octige delicate intenfacus with it

Viewed in a more phetrari fushion Microsoft's ASD Topository is the center of the firm's long-term strategy and ingves access points for a marce access p These access points will not

to be light space of tools that can be used for networks of low-post ICe to realmainframe applications according to Microscott's etratests

landed in this literal is compart for program design techniques such as structured programming tools and other design methodologies, although Mirror and likely will not offer such took track said David Vaskevitch Microsoft's directo refer tempine compatible

Other plans

The company will be a major player in some of the other areas however including distributed database technologies and application construction tools such as programming languages and pro-

With Microsoft's Office, for example all of the comment's major productivity conflications now expose their internal code objects to external marro lan-

The company is also set to appear this month its Object Linking and Embed-Repository, page 50

advanced SQL tool

By Gary H. Anthes

 Software AG of North America gave users a sneak pre-view of an advanced SQL query and presentation tool at a recent symposium here.

To be announced next month and ship in the second quarter, the product uses expert systems technology to allow nontpehnical asers to generate complex and error-free SOL

commands, Software AG said. Dozens of deskton-based tools generate SQL queries. However, according to the Reston, Va., software vendor, most of them cannot handle complex database structures and properting requirements. Even worse, Software AG said. existing tools let users construct queries that produce meaningless or incorrect answers.

Most SOL products require some knowledge of database design, Software AG said. For example, when generating a request for order information in a typical system. the user would need to know that order header and order detail data are kept in separate tables and that the product, costomer and calcanerson tables must also be accessed in produce a complete order picture.

Using a digital "query assistant" in the new product, end nsers can build and execute complex queries with a few elicks of a mouse, while expert rules block the construction of logically inconsistent results, the company showed in a

Thomas A. Steinman, a senior programmer at Maruthon Oil Co. in Findlax Ohio, called the demonstration "very exciting." He said and users in husiness units at the oil com-Software AG: page 50

Software AG unveils Lotus takes on new Approach Version 3.0 will reportedly work as front end to Notes package

Dr. Lunda Dadonardoh

Letus Development Corp. last week said it showed European contomory a probate version of its Annroach 3D deskton database for Windows, said to work as an Approach is able to run "two pass" adjunct to Notes and to interest reports, whereby users can ma-

performance and interface issues in the current release of An-Annewack 30 can access information in Notes forms via "live

links" nsing Notes Field Exchange, That means an Approach user can work directby with Notes date: and changes made in one program are re-Sected in the other. From there meers

ate reports, chart it a fashion they cannot in Notes according to a Lotus spokesman.

"Notes is a good repository, but you still need some- nipulate the extracted informs- pected to ship commercial code thing to slice and dice the informa- tion several times, according to before July, according to the tion," said Perry Hayneworth, a Approach marketing director Ja-spokesman.

vice president at Notes site Picet Bank in Boston. Although he has not yet seen it. Annroach 3.0 rouid encome that need be said

113 the Nature has some perception capabilities, the difference is that

The Notes support also means that Approach forms can be used to enter information into Notes detabases thereby address. ing users' complaints that the Notes interface is not ideal for data

bes similar links to 1-2-3 Release 4, the commune's Windows. based spreadsheet Hayneworth said

Also, Approach 3.0 links to SOL detabos es, so neers could join Notes and SOL datahave information us ing Approach as a

Notes respons complained about the difficulty of linking the different

data forms ICW. Aug 16 19931 Lotus will ship Ap proach 30 to initia

bets sites at the end of March and in ex-



soles information in one field in a Notes database, run calculations based on other fields (sales in France) and formot the devices

Solbourne, Oracle bundle helps first-time client/server users

Solhourne Computer, Inc.'s hundling of its exponentia maltinguessing (SMP) hardware with Oracle Corp. Spancial andienties may not abusys says unapparentials may not aways save us separately but the deal turns technical supposed into a constall proposition

Aimed at first-time elient/server usare Solbourne's Smart Bundle is easentially a turnkey setup designed to sentially a turney serap assigned to ease the transition of accounting uses (see chart). A hig lure for users is the new miss of simples technical help deunite the fact that Smart Bundle is a

Knowing you have just one company to call - Solbourne - to me amb. lems solved is soothing," said Steve Wade director of information technolow at Existabild Source and Defense Inc. The Germantown, Md.-based con-IDC. THE OPTIONION O, Mr. Consta Conhaving bought Solbourne's SMP hard ware and Oracle's accounts myable onckage separately last year.

However Pairchild will likely hav Smart Bundle to climinate one potential nitfall - messy multivendor support - as it downsizes mainframe accounting systems to Unix-based Solbourne boxes, Wade said. Accounts receivable is next on his list.

Oesele's 20th hold on the client/server applications market persuaded Sol-

Repository

CONTINUED FROM PAGE 49

tions or in stand-alone fashion This way users will be able to mix

ding (O(E) rentrol objects OCXs

which let Microsoft and third parties

offer prepackaged mini applications

that can be used inside other applies-

and match which functions they com-

hine to build their own customized ap-

Even before OCXs debut, however, at

least one third-narty developer is al-

ready rolling out a componentized, object-oriented application that requires

a larger OLE-enabled bost application

this month its Visio Express for Micro

and PowerPoint.

soft Office, a 979 add-in that provides

Seattle-based Shapeware will ship

houses to not its own in the database maker's backet. Oracle accounted for about \$75 million of 1983's \$763 million in sales of client/server packages arconding to international Date Com in

First Solhourne of the 7000 handson mean who almed men Owner's sole said Carl Herman

> The bendling poliudo Solbourme

Surther Horman said he does not exnect competition with Oncolo to be an

comments he said with Oracle siming for very high-end Fortune 500 more Sofbourge targets users with annual

databases it wills be explained Colleges alaims to been particular to hardware for Oracle databases and financial packages to wring high performance from the combination Still

come users may needer to hav accounting software alcombon because Oracle packages lack fontones such

as impering and docn-mont manage more said Ven Shirter director of information com-

tome at Floring Hannesonn and Hoschremb was Conversely the

conseils and sheet of Oracle amilications is too much for cal firm, Shirley said.

To me the right fit and functionality Eleming Howavana hought financial modules from Great Plains Software The law firm converties a jet of documents and data warranting the power

of a Solbourne SMP machine But with inst three users to do accoupting "Onacie apps would be overkill," Shirley This is Microsoft rewriting the

Software AC

COMPANIED PROMINACE AS

----- are an arranged to code their own ad box pumy are excouraged in code their own ad hot generation isnguage (4GL), The SQL tool would free them from the need to understand programing innounces and syntax he said. raming sanguages and syntax, he said.

Steinman said the software's apparent abili to to blook flowed exertise was attractive "It is a problem " he said. "If a client desco't know

what he is doing be earned had information "It could appeal to our end users who don't have experience with Natural "said Jose Vron el database administrator at Rochester Gaz & Ci, unnermet nommissiretor as roomiester das de Electric Corn. in New York. "We will neckebb bring it in-house to check out," She and it could many markets in access data instead of havinsteach information systems for help

At the user conference, Software AG an acting user conference, Sonware Acting Access on adjusted to its Natural 4GL that lets Natural users access popular relational database management systems using a single, unified set of

sess problem: Unreliable SQL tools that return

pare AG selection: SQL tool for end users del by expert rules - the inserted marker

ess problem: Limited scalability of visual code maide suntame — dum in third country

and imited acress to all databases in

dame I ark of infrastructure for

and Advantage Matural PDV and Failin Broke

SOI commands it enables not transparently with multiple RDBMSa by trans inling standard SQL statements into the SQL dialoct appropriate for the target database. Vramel said Rochester Gas & Electric is eval unting Entire Access as a way to help its IS stall - trained in Natural on a mainframe - retrieve information from Syhase, Inc. databases on Unix-based IBM RS/6000 servers.

In the second overter Software AG will begin shipping Entire Broker, middlewere that sits between pieces of an application located on different computers. It acts as a client/server communication agent and supports connectionless or connection-oriented communications. It also supports a "conversational" mode In which multiple clients share a single conversation with a server or multiple servers provide the same pervice on a first-available basis.

Software AG discussed in seperal terms a Natural-based visual programming tool, to be available in the third quarter, that will be portable across applications on the desktop and LAN server. Unlike conventional development tools, it will be "event-driven," meaning the resulting graphical user interfaces will drive the application by invoking chunks of application de as needed on the desktop or server.

Framingham Mass will terrent the 400s

Softwarene's areas. dent and chieferon OCHI SHE CHI

> -ment does not from selling applinations from you dam athenthes On to heat intention is to forms on Ornele," Herman spid

issue. The firms to after different user

unles of \$100 million to \$500 million. The market we're mine after wouldn't offered Orescie consustring

implementation bein that Oracle fro-

sheet scon

cation, a Shapeware spoke sman said Microsoft recently released the Office 4.0 applications suite, which exnoses its internal objects to outside macro languages and is OLE 20-enabled. It is destined to be the chief bost for these new component objects.

OCXs and other OLE component objecta, like Shapeware's new product are key to Microsoft's overall strategy and represent the middle of the company's newly proposed three-tiered dient/server model

"The first thing the MIS people ask is "Where's Cohol?" "Vaskraitch said. "In [the two-tiered] model, there's no place for business rules.

Current ellent/server models only allow for a two-tieved model, which requires that either the cisest or server -or both - contain code defining the

business processes. This makes develcoment and maintenance more diffi-With the three-tiered model, "You can rev the page interface and not have

to touch those business rules. Ret right now, it's hard to separate those out," said Jesse Berst, editorial director at "Windows Watcher," an industry newsletter in Redmond, Wash.

soles again No con out there has artic. slated, clearly what client/server should'be, and Microsoft is taking the aggregative to redefine things on its cam " raid Frank Drubook president of Communications Network Architects, Inc. in Washington.

ing vertical The company began more than two

years am to insert itself into several becautive vertical markets via its consulting group and extensions it is adding to the Windows programming interface to suit various industri These industries include retail, finance services, accounting health care, legal, pharmaceuticals, manufacturing and sales force automation. said Dwayne Walker, Microsoff's director of solution schappel marketing. Although Microsoft claims its strat-

egy leaves plenty of room for third parties to cash in, much of the company's plens are less than altruistic. Having gobbied up more than half of the approximately \$10-billion-per-year PC software market, it is now evelor what it sees as a \$50 hillion large-scale mar-

business drawing tools. The tools work with the latest versions of Word, Excel Although the product is purchased separately, it is installed on the host alication's tool bar and appears as just enother function of the host appli-

ReopleSoft would like to suggest 2 key words to look for in evaluating client/server financial applications:

"IN PRODUCTION"

Most application vendors are still new to client/server. They're still making promises, announcing plans or experimenting with new technologies. They're simply not prepared to support you in a client/server production environment.

PeopleSoft client/server financial applications are in production. Today. At companies who are benefiting from our six years of experience with client/server application solutions.

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Windows interface. And our applications are inherently flexible, functionally rich, and easy to customize as your business needs evolve,

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> Tourill find a lot of companies who say they can net was to client/server, and they can, The problem in they often view their relationship with you as a measurementar one wirtually disappearing the minute the sale is complete. We are not simply software mentors. Theread, we look to form partnershine with our quatomers, and work one day at a ates as sends a solid use flexible framework for allow (some compting - so we've done for a over many of the Portuge 1005s. What we offer you is e full range of earwices and people dedicated to making olient/earver work, becked up by e multi-platform suite of devalopment and reportine tools. Hools that from their strangth from wowahrs advanced 40% technology and expand your reach with the graphical reporting power of Front a Center. All of which enables you to build robust applications accessing DS2 and other major date sources such as SQL Server and Orecle from PC and Unix platforms - without sacrificing everything you've invested in information technology. So while the title of industry leader has already been etaked out (by a different company every week), we still intend to lasd you to client/server computing. 1-900-641-MOST. We want to work with you.

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SPAIS/PORTUGAL SWITZERLAND DRITED STATES DRITED EIRESON tegrated robotic tape ingrary that prowork scan server. Simplify the second robotic tape ingrary that prowork scan server. Simplify the second robotic tape ingrary that prowork scan server. Simplify the second robotic tape ingrary that prowork scan server. Simplify the second robotic tape ingrary that prowork scan server. Simplify the second robotic tape ingrary that prowork scan server. Simplify the second robotic tape ingrary that prowork scan server. Simplify the second robotic tape ingrary that prowork scan server. Simplify the second robotic tape ingrary that prowork scan server. Simplify the second robotic tape ingrary that prowork scan server. Simplify the second robotic tape in the seco

DateTools Inc. has announced that cont De at Threat for Cobsess its relation. al detabase utility product will connect al database utuity product, was support Number Deckard Co's RP 9000 MD4 IV -letters

According to the Menio Park Calif According to the stems rark, Cam., and logical format backung media trackand togocal format muckups, media treck-

The newhood courter \$4 505.

Dota Trees #151617.9100

and the state of the later dured Version 1.7 of its Star Works digital video networking software, which supvideo networking suctware, which supdown and Marintoch nerts accessing nides and sudio nerses Pthorned Token Discourage Education State Section Control of the Section Control of

According to the Mountain View Calif. company. StarWorks offers increased storage canacity for video and andi flies: a parity option for easier hard disk man, a parity operation for cancer man a and maintenance features designed to control convention on the network, track problems and make remains.

Charlingha 5004 (5004 hit/see 40-mans support) costs \$24,995; StarWorks-25M many \$14 000; and StarWorks, 17M posts

Starlight Networks (415) 967,2774

Instense Solutions, Inc. has introduced SoftWindows, which lets Sun Microsystems. Inc.'s SunOS users run virtually any Windows or MS-DOS application or utility at up to 486SX PC performance kryels on higher and SPARC marketations

towardingto the Mountain View Calif company SoftWindows provides com natibility with a variety of PC devices and evotems such as COM ports, memory systems, video displays, floppy drives, networks and PC CD-ROM drives A SoftWindows license costs \$549. Li-

cense extensions are available for \$429. ► Insignia Solutions (415) 694-7690 Visual Fedingering, Inc. has an-

nounced Ovation, PC and Macintosh-like neventation graphics software for Unix. According to the San Jose Calif. comnany Oration's features include dragand-drop graphics from other Unix applications, hyperlinks to trigger Unix multimedia features and integration with Unix databases. The product also offers multidisplay presentations graphic arts features such as translucency and graphical on-line help. Ovation costs \$795 per user.

►Visual Engineering (408) 453-0600

Opera Systems, Inc. has announced the MSS-128D Mass Storage Server, a fully integrated robotic tape library that pro-

ingond managing on to 1T byte of date According to the Danvers, Mass. com near the MSS, 128D system incomments days digital andio tane technology and and degree and and on the store of for naturally data-intensive applications including backun/restore and image and multimedia storage

The cost is \$55,000 for a base custom to maximum configuration of approxi-

metaly \$150,000 the Change Condemn

(608) 750 4700

VI (Detacome Inc has introduced two high-performance 9637 Disk Subsystem delethat feature SCSI heat interfaces and althou to on 90 buts boad disk on combline(HDA)

According to the Liste III co the 9637 has a total capacity of 6 8G bytes when confirmed with 1G-bate HDAs When configured with 2G-byte HDAs, the 9637 has a total capacity of 13.8G bytes. The IG-bate HDAs have a mean time between failure (MTBF) of 300 000 hour and the 2G-byte HDAs offer if MTFR of *** ****

Prices range from \$37,400 to \$56,100. b. TI (Date (708) 434-1200

Product shorts

Thursby Software Systems, Inc. has announced Version 3.0 of TSSpet for The Santa Cruz Operation's (SCO) Unix and Open Desktop operating systems. TSSnet offers a cost-effective way to notwork SCO-haued systems with Digital Equipment Corp. systems without inetalling new software or hardware on exlating networks Pastures include a file transfer utility that provides complete hidirectional single- or multiple-file maninulation between remote and local nodes on a network and a gateway that lets Onen Deskton users run DECwindown cheeds on remote VAXVMS evatems. Cost: \$1.995. Thursby Software Systems, Arlington, Texas (817) 478-5070 ... Zttel Corp. has announced that CASD a product that integrates disk drives with the company's write/read eache management system, will use a 4Gbyte drive. The additional disk canacity enables the CASD 4990 to deliver high performance to Digital Equipment Corn's VAX and Alpha systems, along with Howlott-Darkned Co. Sun Microsystems, Inc., Unisys Corp. and Unix users, at a lower cost per I/O or cost per transaction. Cost: \$15,800 for a CASD 4000 with 16M bytes of cache memory Zitel, Fremont. Calif. (510) 440-9600 ... Simplify Development Corp. has announced Version 1.1 of Mailroom for Windows, an office application designed to simplify the processing and communications of docnmente Mailroom and its companion product. ShareScan, convert paper documents to electronic images that can be transmitted over LANs and wide-area networks. Cost: \$179 for Mailroom Personal Edition. A 10-user pack of Mail room for Windows costs \$995.

ShareScan is available for \$495 per net-

work scan server. Simplify Development,

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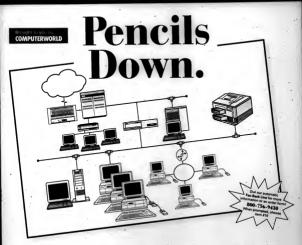
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exist doesn't mean they coop erate The bigger they get, the more you have to manage. More people, more training, more costs That's because most of today's "enterprise solutions" are mally afterthoughts to a workstroup

strategy. They were never means to scale up

Tale up. ing over — fat chance — you've got two choices I is with chaos knowing it will only get women or find a new to tie all your bardware operate ing systems and applications together. Something more than just communication: a solution that lets every thing run under a single manage. ment paradigm, with a single. comber outen sine for were and Scanness system

It's not an impossible dres In fact all it takes is Ranyan's

Enterprise Network Services (FNS.) ENS works with your installed NOS or open UNIX environment to provide consistent mechanisms for managing applications and user populations — including naming security and configuration So a small team of network admin investors can keen a large growing network operating smoothly and

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Conrail makes pen-based connection

by recumenton

It may lack the historical huston of December Point - the lessendary litab landmark where the U.S. Atlantia and Pacific coasts were united by rail in 1889 - but Consolidated Rail Corn's non-based data communications links between its mobile errors and its customer service center in Pittsburgh represent a "gold spike" in Committe between in granuals

Until mountly the \$3.45 billion rail freight until recently, the \$5.45 united rain treight matter to its lecomotive cross once they left the rail yardsons run. But since July 1962. Conand has outfitted 236 locomotives with nenhased computers linked via radio to the Natio at Customer Service Center (NCSC). It plans to equin an additional 417 hecomotives by the and

The naturals called the ISSO Work Order System is named for the counteration on Conneil's work order forms. In the next customers would phone in shinment orders to the NCSC, which would key them into an IBM 3090 mainframe system and then fax them over to a rail yard before a train's departure. Once the crews left the rail yard on a run. NCSC had no way to communicate last-minute changes to them, according to Rick R. Roberts, Conrail's director of transportation/customer service.

When the crews left, we couldn't give them when the crews sen, we constant give them were consested and only used for emergencise" Roberts said of the Conrail-maintained Motorola, Inc. radio network. In fact, as recently se two years ago, the only plausible way to



tooled a tenin hu wantaa it dawn

contact a train conductor or brakeman was to stand on the tracky and wave him down Rob erts added

tion analysts said the communibations rift left Contail as a disadvantage to its mobile, computer-savvy competitors in the trucking industry. "Because of the length of the hand in the Northoust and Midwest, railroads require the speed and reliability of flust-in-time service "noted Greene Anne Lidererood ase nior transportation analyst at CS First Roston

Corn in New York

However, key information technology invements in recent years by Courail and peers ments at recent years by Course and peers the rail industry to do "a lot of serious blocking and tackling" against its trucking competitors



NCSC in Pittsburgh Summer Coldens

computer Case book ---Director ratio madam Ball Not radio national District Foultment Corp. VEX. Corp. and Illas soon

---Bandle Salaratuni refer transport times from exhaust to minutes increased customer receive turns on relicion



Concell's Richard Semerad: The new perc-bases work order sudem will belo Courall be more

managed to the qual name

According to Contail concutives, the up-front nexts to install their work order system were relatively small. Conrail spent \$3.1 million on Grid Systems Corp. Gridpad computers and front-end software developed by Cone Software in Bootheam Pa Some \$2.3 million has been budgeted to coulp the additional 417 locome tives with mobile computers and software. And Conrail has spent \$400,000 to internally develon mainframe noftware to crunch the orders on the IBM 3090 at its data center, placing the total investment at \$5.8 million before monthly com

However, the new pen-based work order ava em was not designed to save the carrier money

but to bein Conrail be more responsive to cus-Contail race 61

Messaging to bridge great ID divide Specification would add information about attached files to E-mail

how to invoke Word or query the Ry Lynda Radosevich

Users can expect to see a major mes users can expect to see a major mes-saging aenoyance cleared up within the next year. Messaging and desktop ap-plication vendors plan to implement a technology that allows different elec-tropleman

This canability is critical to information systems shops that have, for examele different kinds of word processing packages because among other things, it will allow translation to take place that is transparent to end users. Vendors agreed on technical details in

January and will begin testing this month a common way to implement Body Part 15. Body Part 15 is the dubious sounding piece of the 1988 and 1992 X 400 messaging standard that recommends

A major goal of Body Port 15 is to shield users fand applications) from the complexities involved in:

- · identifying the type of the and version name
- & Detaching the file from the E-real message
- Importing the data lets the recipion's own

that a message contain certain informs

tion about attached objects. If successful, the specification will allow, for instance, a Lotus Development Corp. CC:Mail user to send an attached rosoft Corp. Word file across a public X.400 network to a recipient. Using Body Part 15 information, that recinient's WordPerfect Corp. system would know

Exxus Corp. is one user comp

ny that is encouraging the move Se see a definite benefit in being able to receive attached body parts that could be automatical! proveniend by the receiving mail system," said James McDermott a senior telecommunications spe-

recinient about changing the file

eights at Exxon Computing Services Co. in Houston. "Today when you get an attachment, you really don't know what it is, and it's kind of confusing for the user to try to figure it

Although that espability is sometimes available to upers who send mail acro X.400 systems to meers of the same Email software, the file identification process breaks down when messages are nasued between different packages.

"If somebody created an Excel document, and I see an attachment that comes through and it says DBH3GX.TXT

I have no idea what application I need to isoneh to look at the thing," said Bill Brown, an associate at Perot Systems Come in Dollar Burnt is a systems into

grator for elients such as Nationsbank Corp. and Volkswagen of America, Inc. 'In an environment where there are relatively few applications creating attachments, it's not too bad. But in shenvironment where there are a lot ... then

it's a real nightmare." Brown said. The problem mainly lies in a vendor's X 400 enterways, he added For example users must remember to

identify the parent application somewhere in the message, or the recipient must guess which applications to try first. In turn, that anneyance creates a roadblock to wider messaging usage, according to 18 managers in January, vendor members of an

Electronic Mehsaging Association (EMA) working group agreed on a comm Body Part 13 technical solution for iden Messaging, page 63

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National Semi reaps NetWare benefits

National Companductor Com has no regional behindred corp. mar recmends of implementing an early war int of Novell ine's NetWare 4x enterprise

notwork corner Post the state bear being more than off

not be the notabled benefits of nutting crucial data and applications in the grash of marketing, sales and support field personnet, according to Steve Knightenson principal menson, principal soles organization project manager at the chip manu-

fratanger The fundamental advan-

tage of the system, now about five months into its implementation, is that field operatives can now transparently access reenteres on their home server from a lapton, any where in the country

"The entermise nature of (NetWare 4 01) provides me (with) a nice, bomebased operation remotely no matter where t so," said Tom Riedl area director of National Componductor's Fact Coast sales districe

You take the scenario of a support person dealing with a quetomor who save 'I have this problem' the colornerson can dist into the server and secret databases throughout the oreznization to determine 1) if the problem is unique; 2) if the autotion is almosty out there; and 3) the status of the customer's order in the workstream" to pinpoint exactly when it will arrive.

Knightenese seld This is in contrast with the industry norm, which is to tell a customer. "It'll be there in two or three make "he added

Santa Clara Calif

And Resemble makes

der muhating and

Surrout consumer with

named to have comparate

Challenges: To maintain O haved access as users

O GRAND ROCKED BY CO.

lancan configurations.

coeffectation undates.

Technology: NotWare

connect Subsect Inc.

PSitom News 1149

Marks Pro

Catherine Inc. Tr'DAR

cohere SaherLAN

Sustance Link

Workstation 2.0

Windows Sout and Short Although

dial-in server; Zenith

laptops; 486-based

auniusted

Data Systems' Zhate 125

A.O.S. Company Computer

database server un IDM

Wurteniace for COS and

and coordinate

sentiration and

The system also links sales and system nort monie to the qualoner service conport people to the equitomer service center in Armigon, rease, water mey can customer. The system makes the same

data available and shareable among a One assessment and unareasse assess a real or tick appearance and mers, system engineers and smespeople was need to

and answer questions ranidly "Knightenson said. In addition a fax server intolled on each I AN allows the salesperson to recurst. via lanton, that data sheets on

a particular product he sent directly and immediately to the customer Previously. mak a mouset took a counte

of down to fill What makes all this mostly hte is NetWare Directory Service a dobal directory that posides on Not Wags 4 01 norm. ers and automatically conneeds an authoritorist with the requested NetWare

service or server, anywhere in the enterprise Framerelay links among all the field -Mars comme from manager time even when a cross-couptry detour is necessary.

National Semiconductor also chose to implement Net-Wasn/ID Novell's mosestly chioned product that enables clients to access NetWare services using TCP/IP. This is becourse the company has stardestined as TCDTR so its corporate transport protocht, as well as for IBM bost access. Rigdl said Indeed the firm is climinating its NetWore for SAA, which provides SNA links to the hosts, and will instead use TCP/IP on the main-

The combination of Net-Ware 4.01, TCP/IP and mobile laptop users has presented National Semiconductor with

some unusual challenges, that few, if any, Novell users have facual Enistenance said. For example, his group had to fit out now to enable users, WIND DESCRIPTION OF THE

TYPED enhantment to lost TOTAL SERVICE OF A STATE The company rejected the idea of having more shows their care address.

ès as too error-prope. The eventual solution was to instell Ships Corn's LAN Rema C diel in comme of each field office LAN end hade Films Keinbles seeign seed user to one mort on each LAN Ropper within to one floor sub-The I AN Department house coming TCP/IP address

from a visiting user and maps it to an address that allows across to Northern resources on the LAN. National Composition of on overly sull's Neilliam Connect remote access software but rejected it primarily bo come unlike Ships's product it does not support Apple Computer, Inc.'s Apple Remote Protocol a few of the lantons are

Manistanh hannel

the problem of users reconfiguring their postables by adding software or chang

ing the interface. "providing nomething they bought that something they bought that we've painfully set op." result of this is that the moor's portable messes up at con critical inneture and when the most reporte the problem he neglects to mention that it

has been reconfigured "So you have the hot line trying all binds of things and run ning into walls." Knighten ming mis The solution: locking the avstems down via software

and ensuring a consistent image and configuration throughout the corporation. Users can vote to add som thing mingly majority rules.

erplatforms before it settled on NetWare Univ "in a wireout reduct environment but it takes a lot of [people] horsepower,"
Knighteneou said Microsoft Corn 's Win Anignication sand services I don't want to bet the farm on it right now."



Briefs

oo, wireless mall merg

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Cisco: Bringing virtual networks to reality

De Charles D Vist In

affect's recently unusited internet a Cisco's recently unveiled internet-working strategy focuses on perhaps the two hottest networking topics today — Ethernet switching and virtual net-working. While tha benefits of auch are well-known, the plausibility of virtual I Alle complete a question for users

Virtual natural ingle the shility to lost leally move individual users among more more individual users among about and about the decision applied

or nothern for example, a network administrator can move Indicated your nodes in one subnet by "cuttine" them from a schematic on a centest montratelles and 'nasting' them into another subnet

For the short town Cisco's strategy combines router-based virtual networking over a conner or Pilter Distributed Data Intenfeno (PDOD book bone with Ethernet switching. For the long term, Cisco is newiding a migration neth to internetywebs

based on Asymphro a man Theoretica Mode (ATM) technology (esschart) Essevample it is shinning an ATM router interface now and developingwith NEC Corn on ATM switch slated to ship this summer ICW March 71

As a core element of Cisco's stratogy the company has essentially pulled switching out of its 7000 router family and implemented it in a silicon switch processor, which Cisco plans to integrate in future products such as at intelligent I.AN bridge. The 2000 will then be nositioned on the periphery of the network. acting as a gateway between wide-area networks or as a fire wall between I.ANs.

in this respect, analysts said, Cisco's

continue abiliography is similar to 3Com Comic Remoters Routing ambitostum which Warm your complements with high which 3Com oow comprehens with high speed switching too

To ATM WA

Notwork 2005

Cisco's vision for the internetwork

Some users, while intrigued by the concent of virtual networking, said they had doubte about its for all its 'It sounds like a nice feature that DA

mostly like to see because it could result in simificant savines for us, but I don't believe what they are stating can be done nestimiesh armos the wide an en " said a telegom es, sea a macom munications manager at an take come

> who monasted water the later Analysts said this was a nonular permits a hobert herand represents a mator burdle for notmorbing madem to clear However they said Class man be head costs and to im. oces positivities notworking and move it from dream to medity

"Pronie have been

talking about virtual

networking for while but they didn't have the clout of a Cisco, which should go far in beloing to educate the market," said Charles Robhins an analyst at Aberdeen Group in

Paill abaneous said Cioss's plan to offor motor-based virtual I AN canabilities

"Up to oow, most people have been talking about virtual networking through ATM or a new switching bob. This is the first router-based virtual necworking I've seen," said Kathryn Korostoff, president of Sage Network Research. ine in Natick Mass

By integrating this function to routers.

absencers said Class has the n partide more reduct carebilities — such as wide-area virtual networking — than lie hob counterparts

Sun counterparts. sporting holds a lot of promise

"The concept of virtual networking is ner intriming to m — contribly mor

the mide size " cold Com Distant man Sering of America in Impindate Calif. which uses Cisco and CahiMron equip ment at its headquarters and at more than 360 branches. "The ability to construct and manage virtual worksroup struct and manage virtual workgroups help we gest out a lot of comensive tring to our wiring closets and possibly a lot of tring to our smaller branches no well."

A matter of packaging

ii of the joint development, ac quisitions and road maps aned in the networking market of late are making it dil old for many to choose a strainty of their see ICW March Ti

"All the vendors that used to fit in neat little extensions no longer do. which is confusing to users," said Kathren Korostoff, president of ma

ket research firm Sam Network Resound he is Natick Macs Konstoff and other observer, said the question is now one of wark art

- who offers the most robust reliable Seature and at the best price There is a lat of some for import

ment in the latterestomery users said ment in the satter capagory, users said and they are holding off on making de cisions until progress is made "I don't believe that wondow are

getting the message the world has shanged "cold Sam Diature manual communications at Home Se ings of America in Instantale Calif Property are technology was the r rec yours ago, tecanology was the driving force behind information avatems purchases, where today price is the driver he said "Vendors don't an pear to realize this and want me to ney for their I research and dryslor ment | -- for canabilities | may not

even need — which I refuse to do " -Stephen P. Riett Jr.

INFORMIX ASSOCIATES

Products around the corner

uets as part of its interpetworking ing ATM switch will

apport op to 16 155M bit/sec. ATM ports and comply with the ATM Forum UNI Version 3.0 signaling standard, which will eliminate the need for a arate management unit. It will ort both permanent and virtual witched circuits and will have four priority levels and separate queuing

*The ATM interface pro allow any Cisco 7000 router to communicate with the ATM devices. It will be available in May for \$20,000. an Ethernet-to-FDDI work group switch will shio this month. The fit eled 70/10 router will have the funct ality of the 7000 series but in a small chasis. It will support op to 18 LANor 24 WAN interfaces. Prices start at \$11,900 a A athle

the 7000 family from 110,000;



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Operate at a higher level."

Conrail

COMPRESEDENCE BACKERS

tomers and retain more of them according to Biohard F. Samerad, director of ling to Richard E. Semerad, director If for example General Motors Corn needed Connell to nick up two frought cars of headlight assembling at its Tarre-

town, N.Y., plant and deliver them to Detroit, a locomotive crew besded in that direction could be notified over the RAM Mahil Date sedie network moseon the on der on its Gridnad computer and confirm the enderwith the NCSC within minutes

Speed w-

At least one of Contail's customers anid he has benefitted from the new system "Me've elective witnessed outsign me consetime in setting our cars in and out of the plant." Raid Jim Embrick a distributton group leader at Air Products &

Chamicale Inc in Daulchara N. I. Although some computer-illiterate Consil operance were relucted to use

Ston Schott

ATM

realities

The releasement was clearly frazzled

Looking over his shoulder to make sure

no one was eavesdropping, he opened his

animoust to necessal company notwork inter-

cards" be whispered. "These are going

Hundreds of business plans are being nerated right now on the premise that

Asynchronous Transfer Mode (ATM) will

he the dominant network topology very shortly. Yet many of these plans are

based much more on anecdotal evidence

and wishful thinking than on hard facile

in the past year on the impact of multi-

a new Jaguar. Despite the indu

media on ATM sales. I could pay each for

hype, do you have any idea how few Fortune 1 000 companies are planning to

add multimedia applications to their

LANs over the next year? Information gathered from more than 150,000 inter-

views indicates that fewerthan 100 sites

Recently I surveyed network manage

ere at large sites in the process of migrat-

ing mission-critical applications to their LANs. These applications ranged from

customer databases to industry-specific

imaging and multimedia programs.

These network warriors are on the bleeding edge trying to balance their desire for petwork interoperability with re-

liability. Their jobs depend on keeping their networks trouble-free.

will add multimedia LAN applications.

face cards, "IBM's low-speed ATM

to be very hot "

Consille anda Work Order Surtem





the nem-based systems the company's The Company of the Co posted to increase draperiodical as the carrier adds other mo. district

"I like this system because compacting use work is a lot laster uses use 1080 pe-Consult conductor based of the Philadel. phie reil yard "Resides, no one has to pain rail yard. Besides, no one isso w Morray added

To date Conmil's radio nebunek costs are \$22,000 per month, which owers the use of the pen-based systems from its Albany N.Y. Philadelphia and Harrisburg.

ested in ATM long, range but wise looking for immediate solutions that offered complete interoperability with home I Alleganian Sthernet Token Ring etc. The year majority was leaning toward

switched Ethernet and Token Ring, as well as 100M hit/sec. Ethernet and Token Ring About 10% planned on the Piber Distributed Data Interface (EDDD) Remore than 400 ATM switches were and in 1992 This number will more con-

siderably in the next few years, but there are some constraints that must be kept in mind. Many of the large corporations that purchase ATM as a backhone solution will be looking toward seamless LAN to wide-area network connectivity.

Don't count on it yet Despite what you might hear from ven-

dors, don't plan for widespread ATM on the WAN with LAN interpoperability befrom 1906 I only for intelligent hubs with ATM switching functionality, such as those offered by SynOptics and Cabletron, to become popular with the Fortune t,(0)0. ATM on the desktop will depend on If I had \$100 for every report generated how quickly adapter prices can drop below \$700, as well as how quickly new handwidth-intensive applications each as multimedia appear and strike a re-

There is no question in my mind that ATM will become a dominant network backbone topology during the next few years, but it will co-exist with 100M hit/see networks and switched were of both Ethernet and Token Ring, as well as copper and fiber versions of FDDI. Network managers will mix and match these

topologies hazed on traffic patterns and individual name needs So the next time someone offers you a single, inexpensive solution to handle your high-bandwidth network traffic. don't take out your checkbook

Sobatt is LAN service director at Com-

selbarrace/laduCorp in La Jolia, Calif.

the pen-based systems, the company's annear to have been effective Tilke this costem because of

such as Indianapolis and Doorborn Mich and future applica tions to the network such as rail lowe toping and locomotive served medicalistican of different points on much man assorbing to Jarry T Conway a Con-

and contemp managed

Recense Conrail



minimum are added to the vetures dominator the Northeast (reight industry and its operations are limited to that

based systems prob ably make more sety make more couth collular not costly centur netnacie necessions of Lempesis Research

a Pleasanton Calif. on a second nectocani firm that enecializes in mobile compart Collector computing are deployed across 979 of the U.S. while DAM Mobile Date's metawak account only Hetwork povers only

Lemnesis said. "But if you're running a lot on the East Coast I'm sure the RAM neme medicalesed networked communi-

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Integrated software, Worldon

High-tech execs laud information highway

Increased business officiency is the most important posses for building the most ernment-anonpored National Information Infrastructure (NII) recording to 400 high technology companies responding to an American Electronics Associa-

tion (AEA) survey of its members Boosting competitiveness and aiding research were ranked second and third Asked to sesses the importance of the

VIII to 10 based industry comments sun you respondents named advention as the vey respondents named education as the dis/publishing and banking/finance Many then helf sold the XII provid enable them to be more responsive to custom-

What is 117 The NII is a concept promoted by Vice Provident Al Gorn for a broadband internetive multimedia network and applica-

tions for austress, equipment and conwill contribute to the building of the NII they recent command as not entited master of it said Claiborne Johnson, corporate vice assertions at Floretwein Data Syn.

time president at Exception of the AFA tack force that sponsored the noil. " to be a supplementation of the supplement of the supplement of the supplementation of the son and "I don't think that your many needs if east assessment of them a saifteh nonmestive Most of the mesa seinin perspective, most or the ques-

going to use it in your business? not How are you ming to sell to it?" Respondents said electronic mail and electronic databases were the most useful NII applications for their companies Mose than a third said it mould help their

employees telecommute. About three quarters of the executives conveyed cited government regulations and a lack of standards as two obstacles to execution of the NTI Clickthy more than

on Inc has at Serint Male 1.0 a product that sutomate

er to mainframe tooks includis routine mainframe maintenance jobs According to the Rossell Go. comm Contesting to the Monwell, Oil, Compa most 3270 terminal emulation software It can rehedule unlimited jobs and featrans amon eletterm intercourability and improved extensiv perform

SerintMate can run a serint stritten for one employee on one operating system one emulator on one operating system dor's emulator on a different operating nature without making changes Single user prices start at \$705, and a five-user petwork license mets soot.

(400) 649,0904

Paterprise Software Corp. has intro decord Not Charming a received that halfs manufacture to a service based com mitments simplifies procupes from complete or partial failures and provides full

According to the Marina del Rev Calif. company Net/Durniew offers visibility over the entire backhone network and diwas network difficulties at three lev

The product automatically delays The product automatically determines Ring (barkbone and houndary). plate SNA network Ethernet (TCP/IP) A V Dr -------Recommends include IRM's Northern

MATCH and NOW Prince record from \$30 000 to \$80 000. ► Enterprise Software (310) 305-7721

Recore Computer Products, Inc. has introduced a PCMCIA advanter that comneets notebook and lanton PC users to their correcte or branch office Token

Black corporate According to the Los Gates, Calif., co name the Beaute Token Bing Gold Cand offers planend-play compatibility with all computers that are compliant with

the PCMCIA Release? Octandard The Token Ding Gold Cord is invested into any Type II or Type III slot, and the appropriate driver is selected for a LAN

Support for abiolded twisted-neir and unshielded twisted-nair Token Ring ca bling types is provided. The PCMCIA adapter design uses Texas Instrum Inc's Token Ring chin set for hid

roughout at 4M/16M bit/see creeds The Token-Ring Gold Card costs 8485 The Token-rung Good Card cost ele: physical component, user session (408) 374-8990

Mail gateway upgrade due

Computer Mail Services, Inc. said it will take over development of an uperaded Microsoft Corp. Mail to MCI Global Mesander Service misses software nackage for translating and routing mossame between the two systems

The Couthfield Mich common which develops MCI gateways for Lotus Develpoment Corp., Banyan Systems, Inc. and Novell Inc messaging systems, said it will ship a new Microsoft Mail gateway by March 3t. The externar will undate Microsoft's current Mail to MCI stateway. which the company will no longer support or develop, said Jon Goodman, a Microsoft product marketing manager.

The gateway will reside on a Microsoft

with MCI Global Messaging Services to forward mail and favor. The major additional features include charmhack codes that validate message use for attorneys and other professionals with charm back their services. It also has a feature that lets administrators preclude certain end users from using the MCLentemony

Additionally users can acress the outeway directly from the Microsoft Mail address list, according to Computer Mail Description I the Tab Wood The enterprise will ship for \$495 for 10 users or \$890 for a "post office" vertice.

--- Lunda Badoerrich

Messaging

CONTINUED FROM PAGE 55 tifving attached messaging objects. The

vendors included Microsoft, Lotus, Word-Perfect, OSiware, Isocor, Hewlett-Packard Co., Digital Equipment Corp., SoftS-witch, Inc., AT&T Easylink, MCI Communications Corp. and General Electric Information Services according to Neil Koorland, working group member and development leader for enterprise thousand the stiriton and

Some of the vendors will begin testing the message attachment technology on March 31, and the remaining vendors are likely to complete testing during the next six to 12 months. Details have not been finalized

Products using the object identifier should also roll out in the same time frame, according to Koorland.

Isocor. Digital and OSIware are exexted to be she first vendors to participate in the feasibility test, according to Before Body Part 15 can benefit users

application vendor's must register a unique object identifier for each attachment type with authorized entities such as the American National Standards Institute. For Lotus, WordPerfect and Microsoft, that project is already under way Koorland said The EMA has agreed to publish the

The Multinumose Internet Mail Extensions (MIME) define similar espabilities

for Simple Mail Transfer Protocol mesging systems such as the lateract. Once Body Part 15 is in use, it should

not be difficult to enable it to work with MIME and allow internet and X 400 users to exchange identified attached objects: according to a member of the EMA work-



THE NEWEST WYSE TERMINAL THEY EVEN ELIMINA

ho needs to be bombarded by unhappy users, disgrunded accountants and irritated engineers? Particularly when you can avoid such stress simply by busing one of the reliable new West terminal products.

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COMMITTED TO STATE OF THE STATE

Price battle set for host storage

IRM addresses FMC's rapid rise as RAID vendor

DuCasia Stadence

The surress of EMC Corn 's Summe frame storage subsystem has counded a wake-up call at IRM which is now telling industry analysts it plans to facuet FMC with more aggressive tion That is likely to many hetter storage orices for large systems shops

Some weers are already witnessing IRM's new ageressiveness in action. "I'm seeing IRM doing things that I don't ever recoilect them doing before," said Tod Divon sice president of information recomposed Northeast Dillities an electric

Northeast Utilities is in the final stages of choosing a vendor for the nurchase of more than 1000 beton of

mainframe disk and tame stoeses secondinate Divers The second of the second IRM FMC and Storage Toch nology Corp., and IBM has "yery agmessive" paining be said

"A lot of times (in the next) TRM had trouble understanding the difference between their fived price and the market price." Dixon said. "They've made streat Inmeds there New they seem to be out there earlier that they're not minerto lone

IBM is also taking a more liberal view of "all the little execteters that they throw in to make price less important Discon noted Included in the nitch to

tensions" on storage warranties beyond the standard period of one year he said

Not exemple is continued however Stan Johnson director of MIS for World port I.A. the Los Angeles port authority surved that IBM appears to be trying to "Gnally wake up" and make itself more competitive "Rut they just don't know hourt come out here and market like the other days "be-nid

While other unrions such as EMC make do with one salesperson. IRM still conde a team of enlargeonic to meet with sends a team of surespeople to meet with learned the leason out that it doesn't take

five IRMers to change a lighthulb " he said "And the nonple that pay for it are us. An IRM spokesperson said regulation at its Storage Systems division "have been stating very strongly that we intend to be price competi there were traffy and other vendors. IBM also expects to he able to point to product

advantages once it ships new cache features announced two mocks ago and podendant deman of its expensive disks (RAID) that are under development, the spokesperson added. Nick Allen an analyst at Gartner

Green Inc in Stamford Conn. exiderica competition should get even better from the customer's standpoint once IBM delivers its RAID products. Those devices were due out in the second quarter but have been delayed until September.

Right now ISM's scrated to so most me tomase to mail which is what they have to do etsum their nor tion" with the RAID home still not made for objective Aller enid "1995 is Nikely to he pretty bloody on

in being nushed by the market share mins EMC has made at its exover the nest two years, analysts said EMC in Hookinton. Maus tripled its mainframe direction

cess storage device (DASID market share last year or ing to International Data Corp. (IDC) es timates (see chart) FMC has shinned about \$000 of its high-performance Symmetric subsystems with RAID Level Ldisk mirroring since late 1990

In the big leagues Two years not IRM virged EMC as a minor approvance," said Robert Callery

an analyst at IDC. "But EMC just look the hall and ren with it and IRM kind of mi left in the dust a little his TRM was letting PMC wolk owny with

the market without putting up much of a fieht " said Mike Casey an analyst st Computer Intelligence/InfoCorp in Santa Clara Calif "ISM needs to resmond with products: they also need a more aggres-

sive marketing and sales appproach. Doug Underbill, a technical special at CSX Transportation Inc. a railway transport company in Jacksomille Pla and other EMC broke the terrical maje frame DASD mold under which IDM man the technology leader and plus-compati-

CSX expects to replace some of its mainframe DASDs this summer as leases mun out on installed devices and will look et hosh IRM and EMC Underhill said "My inclination is to believe that IBM will be more somessive than they would be if these were just the traditional pompatitors "he added.

See related stories in the CW Guide to RAID

lean S. Bozman

Keeping the house in order

Housekeeping, bousekeeping, housekeening The very until sounds dull, laborious and slightly about the But an access many faces the safety of the "glass bouse" data center - renowned for its housekeeming of data files, job scheduling and off-site storage - they must apply the same housekeeping skills to routines of the distributed network

Dall or not, housekeeping paid off for IS managers caught in the Los Angeles earthquake. Those who carefully stored operating system tapes and duplicates of applications and data files off-site were the unsung

beroes of disaster recovery. It may have taken hours, or even days, but those computer networks gut back in business, even if they were moved to other sites Some IS shops in Los Angeles, including ITT Githis

an ITT Corp. radar couloment subsidiary in Van Nove Callf have even made a point of locating PC servery in the data center ICW. Jan. 241. That simple IS technique ensured that backup routines were followed regardless of whether end users remembered to do them in their work of olong And PC users long proud of their indepen dence from the class house, were served well because they were back in business shortly after the quake.

Jockeying for position

The Unix world must also take stock of its housekeep ing, even if no quake is in sight. The single greatest barrige to Universe mouting in mainframe shops today is concern about the reliability of data stored in distributed Unix servers. Some large corporations are extending Unix pilot projects until systems management software catches up with distributed computing. Measurbile, others rely on modules built into the Oracle and Sybase database management systems to assure data integrity in large Universations

Quite literally, a race is on to see which vendors can bridge the systems management gap with Unix applieations that mimic the housekeeping routines of the 1BM mainframe data center. Leading contenders to clean up in Unix systems management are Computer Associates in Islandia, N.Y., OpenVision in Pleasanton Calif., and Tivoli Systems in Austin, Texas. But many small firms are fielding systems management software.

The phenomenon is well understood by Sun Microsys tems, which has begun to sell its large-scale SPARCcenter 2000 servers to bost new applications at IBM mainframe sites. For example, a 16-way Sun SMP server and a 300G-byte Oracle relational database at the Fingerbut Cos. in Minnetonka, Minn., now do some of the order-processing work formerly handled by an IRM mainframe and IRM's tried-and-true IMS datab ICW, Feb. 71

Sun is said to be preparing a large-scale RAID storage system to ensure that such gignatic relational databasas minish hold mission outland data - non ho milishby backed up for data recovery. In time, Sun will also lever age its 1985 partnership with Amdahl to add systems management software and file management routizes to SPARC servers' avatem software. At multivendor sites, other housekeeping issues have

already surfaced. Large financial brokerages that use

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Encore introduces scaled-down Infinity 90 model

Pacing slower than expected sales for its Facing slower than expected sales for its native Encome Computer Corn last week native, Encore Computer Corp. tast week the Infinity 20054 designed to make the massively narallel line more competitive with remmetric multipro-

with symmetric multipro-The Infinity 90's previous starting price of about geno non turned out to be "n determent " especially with commencial customers who

commercial customers who test the open systems waters neknowledged Kennoth Fisher Encore chair. man and chief expentive officer "Unless was more mondy in start in a major way we had a drawback." Fisher admit-

ted The two-processor infinite: 00/2 A is positioned as a development system for doing pilot accommisses of mainframe amplications he noted and could later be scaled up to a langua Infinity 90/ES system

Bindy for the his time? Nancy Stewart, an analyst at Datamest Inc. in San Jose Calif. said the addition of the Infinity 90/SA could bein Encore in hate that the was more skentiers the kets. But she was more saspusas suous

tor in the commercial sector "As far as any broad market annual that still been't come for them "Stewart said Facore faces an aphill structure in tering to compute with better-boom

OMP unadose such as Here. lett-Packard Co. Segment Computer Systems, Inc. and Personid Technology Corp. Stewart added

Cost considerations Crair Lynch, Infinity 90 projnot officer at the U.S. Deect omeer at the U.S. Defence Information Services Commissation (DOSO) in Don-Organization (Dioo) in Deli is "a superior technical machine" with compelling cost advantages over MVS mail

frames. The Infinity 90 is A state to de mate france and DESC manufacture five-year cost of ownership to be 58% lower Lynch noted Honores monmont america more

than commercial shops, "would the the usive amounts of Unix processing that really fit the infinity mold," he said. Cocom's himmer problem has been in marketing They've been anable to get a foot into the major market areas."

The Defense Department has an Infin- be of interest to DISO, he added. "It by 907S system running prototype CICS applications at its Columbus Obje

data processing facilities, according to shipping the massively narallel technol I med. The lefinity 90/SA is too small to one in 1997 according to Pisher

sounds like what you've got there is a file

country i CRCs apparentions at its Commons, Onto, server, megaceuter and is looking at implement—
Encore has installed between 50 and ing the technology in its other IS 60 infinity 90 systems since it started

RAIDing the market

utives expect that a reed to supply redundant arre

mosth Wiches Proces's shair. on said shipments of the RAID or "quickly outpace our system sales But he added that Encore hopes to of the storage device will eventually to expand it into a full infinity to evetem by adding processor board

for has no plans to sell infinity it notors other than the RAID unit Pisher concurred, saying the letter of intent "covery only the storage side of the leave but we think they have in net in the other side as well." ndahl and Francis said they ex

station capabilities to its RAIDdeston as it one small with MVC and VM mai frames and Fisher said shipments to Amdahl are expected to start in the

Trams upgrade gets interface bonus

Owick change

Encore plans to nutri

the infinity on from

to Intel Corp.'s

the year, said Chairman and CEO

mis. inc.'s After

minuterp. s

Software Engineering of America (SEA) has introduced a snazzy module to accompany its Release 4.0 upgrade to Trams an electronic data-transmission management system for mainframes. The Trams/400 Interface allows an IBM MVS mainframe to automatically to a self data to ACMON machines union 1110 9 protocole Although AS(400 machines have built-

Rozman

CONTINUED FROM PAGE 67

thousands of Unix workstations must

ensure that customer transactions do

example. Even daily work loads can

not get erused during a power failure, for

cause system downtime if interactive ap-

pliestions perempt hatch-oriented tasks.

Some users have written custom load-

balancing software to ensure that the mix of tasks running on an SMP Unix

server does not bring the whole compa

ing from systems vendors.

ing "tower" tumbling down. Off-the-shelf load-balancing software is also surfac-

PC users are hardly immune to lapses in bousekeeping. IS managers in large

corporations fret about it openly con

corned that data files are not backed up at day's end - and that some vital data in transmission modules. SEA claimed its software package is faster and more convenient for AS/400 neers. "The banking industry, for example, would find this of interest" said Mario Labita, SEA's

Trains product manager.

- Thomas Hoffman

The Trams/690 Interface is priced from \$3,000 to \$15,000. It is available im-

ains on floory disks and is never con led onto petwork file servers. Novell and Microsoft are well aware of these concerns and are building ptilities that make it easier for systems administrators to archive user files on shared servers.

There are signs of a bousekeeping revolation by 1995. First wonders are rushing to rewrite mainframe and minicomnuter lob-scheduling and backun routines for use on Unix, OS/2 and Windows NT multitasking servers. Second. industry analysis are calling for a new generation of systems management software that dovetails with network management systems. And third, but not load were are beginned to sten into the world of distributed computing without first trying some software that will keep their virtual computer rooms in order

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Large Systems

System Software Associates Inc. Pike has announced Version 3.1 of its Main/Tracker maintenance management motor

Amording to the Chicago company the product was designed to belp businesses product was designed to acopulations better control over conjument and facility maintenance operations

Hoose can design custom work order Users can design custom work order etreemine the validation process by specifying from the system level the costineffelds to be validated or required; and antematically macs undata part master fields with a program called Part Muster Mario Chanata

Main Tracker is available in English. Passish French Helian Garman and Viscolog 2 4 paices range from \$2 500 to \$240,000, depending on the IRM server

model on which the applications are beinginstalled Sustem Software Associates

entra est popo

information Builders, Inc. has announced an Enterprise Data Access (EDA) client/server software interface to IRM's Information/Management Version 6 for MVS/ESA. According to the New York company.

the EDA/SQL Data Driver interface provides Information/Management users with SOL-based desktop access and reporting capabilities through ton PDA-SOI third-ourly front-end tools and

EDA/SQL users can access information/Management data in addition to the more than 50 beterogeneous data sources on interconnected IBM systems, such as MVS and RS/8000 AIX and non-IBM systems such as Digital Equipment Com's VAY Howlett-Packard Co.'s HP/UX. Sun Microsystems, Inc. Unix systems and a variety of other platforms and

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Intermedian Dimensions Inc. has an Information Dimensions, Inc. 1118 announced the mass Scientiserver, a sourdard Octoriation and townstage to the Dublin Obio comme

ny the product was designed to enhance a SCMI publishing system by providing database management optimized for

Paris SCM comme accepts musting make distribution occupie, queries,

con components as separate objects. The product dictions SOMLacces penAPI as camabic interi Pricinghering at \$7,000 Princing degrae at \$1,000.

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Athenia Sustana Inc has announced DCF the Date Generation Parilly for

per asserting to the Asherdin, N.C. company DGF reduces the time and company, IAP reduces the time and and improves the smality of the applicaretrieves and manipulates Science doc

tion system being developed on system being developed. the ability to populate columns from DB2 tables. VSAM and segmential files, the

comment unid Prires start at \$21 000 Softhose Sustems C041251 0002



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E Ted Prince

The problem with multimedia



That may be true, but it will also lead to even higger project debacks than we beingger project decade a till get worse before they get better. When it finally does have an impact, you and I will probably not be part of it. The Hollywood types will take over information technolow instant

ogy meens.

Remember the baleson days when we worked with 260s. assembler black-and-white screens and characters only? All the programmer had to know was loste and how to solder Now it's different -- color, sudio, video, GUIs, physical metcolors blowdoes a simple techic cope? Knowing C++ and apports. How does a simple rectise cope. Icasoning of just about code. They are about impact, experiences and psychological manipulation. Our programming courses lag

Understanding the impact

Our systems designers and technicians not only have to understand business obsectives but what impact each of the plethors of multimedia choices has on the consumer. Do I use video here, or is it overkill? Color? Audio? Black and whited Film nois

These decisions require a cognitive model linking behavior and application that doesn't exist yet. Uotil we get it, expect the more imaginative information technology proj ects that heavily use multimedia to fail absolutely or become white elephants, rather like Charlie Chaplin in his first

The first of the metter is that traditional programs skills in all their forms are be coming obsolete. The program mers of the future will be creative types, prima donnas paid like film stars to create the next logical Terminator and the next electronic Madonna. They will resemble film producers more than logic writers

Developing for multimedia

The film producers have already developed the cognitive models for multimed is through their Hollywood experispees; they just haven't heard of methodologies. Our future multimedia architects will combine their creative talents with logical and methodological skills to help programmers - the extras of the multimedia world - create these advanced experiential effects by rote.

So watch for multimedia systems integration and meth odologies to soon hit the street. The Arthur Andersons of this world will soon be hiring film producers rather than just project managers to develop and implement the methods

gies that will be the CASE tools of the late 1980s. Our best multimedia types will be game software mavens, who are used to fun metaphors and skills. These people will gradually infiltrate the regular programmer corps, so don't fault your regular guys for illicitly playing games on their computers, That's the way we're going. Finally, systems will

be fun

Prince is president of Porth Ventures. Inc., a technology publishing and mergers and acquisitions firm in Hawley. Pa. He can be reached by CompaScrye at 74073,1236

Standard GUIs make sense

Could make users more productive

District Base

It matters to more if they have to to manual's to users it carry have to nna it matters to users when tan ping the D key means Down in one pung upe a key means bown in one application and Delete in another

It matteres lot Making users more productive and less more to errory is reauso enough to standardize graphi cal meet interface (GIII) servere across all applications, but there

Experts said a Gill standard that improves software unability nell also reduce the number of

calls from frazzied users to the

A third honofit is that neversor. more will not have to start from mers will not have to start from calls for a browsing mean or some other common GUI element. Idealby the GIT standard will have a template for how the screen should look and poerate, backed no by reusable code to make it hap

The bardest part is making the design standard a "living document" enther than a dust'y book of

the shelf, according to Eric M. Schaffer, president of Human Fac-

ine a Physical Lower the at an interpretation Sam that appointing is beining communics all combines

the same at the Resul m it if Occasion to Thomas on Comedia in cond a GIII standard led upon and non struggies to keen it nedeted write rent ablanda and est uso

grammers to actually

The bank has developed working models of the standard screens that "will probably become the standard more than the docu ment," said Jamie Incham, an internal usability consultant in the bank's information systems denert meni

Owners Court emphasis was or redocing the amount of training and relearning necessary to use or applications," he said Dut insham said the hie chall

bence into and developers to use the standard rather than create screens from scratch, Techniques ter compounded that barrier in olodo internal consulting or class. es and retfing top management to understand that time and money are wasted when the templates

The most deponden technique is to send in the auditors, who can shut down a project that fails to comply with the standard. Thus

Gills, page 78

Developers key to lower support costs

opers can help mitigate the sain These techniques are important for developers to

adopt. Typically, application designers spend half their time - and attently more - answering end on ere' emestions and providing related system support. This means they have less time to develop new systame as fix old once According to nearly every research study on the

topis of distributed computing, end-user support costs are rising. Some information systems shops are meeting this challenge by increasing the number of technical support staffers [CW, Feb. 28].

Looking for cures

But there are other remedies as well, according to users and analysis.

. A recent study by Real Decisions Corp. in Daries. Conn., a subsidiary of Gartner Group, Inc., pinpoints some of the techniques used to combat rising support costs. One example is to adopt a layered approach to closest to them and a central support staff can provide additional resources as needed. There are also some pofrence packages, which are being developed in-house as well as purchased off-the-shelf, to help developers provide more efficient support.

Successful approaches .

proach and the technology with success. Inland Steel Co.'s Utilities Operation Center in East Chicago. Ind. uses local support teams because "they become specialized in that field," said Adarbad Master, project engineer at the company. Therefore, they have the most appropriate understanding of local support noods Mastersaid

He added that support makes up 75% to 80% of the costs at his organization, something he is trying to reduce by training more local support staffers. The local teams also input data to centralized 15, Muster

The Chase Manhattan Bank NA in New York uses a centralized help desk and database to log support problems in the Manhattan area; according to Gree Priodman, vice president of applied technology. The Support, Magy 76

Software development kits

Phar Lap kit gives DOS developers a break De Mallada Carel Ballan

Phor Lab Software Inc. in Combette Many is bring to make life peaker for DOS developers steking to mean Wesdown front ands for 32-bit DOS programs. according to company officials and ore secording to ec

would when an wort to Windows " coul Don Une provident of Wallstreet Anglet non tree, president of waastreet Affalytanequalizing in high-end financial car. shecratified in ridirector prosperor serable to use Unwice 4.0 of the Borland neiler which has a very mod dehutone built intoit "

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Phar Lap's THT BOS-Extender lets desviouers put the Windows front and onto language DOS pergrams without rewriting the programs

Beta testers spoke positively about the latest version of Phar Lap's TNT DOS-Extender Software Development Kit which in addition to expersting Visual Resic Windows front ends supports Bor-

land International, Inc.'s new 35 hit DGS remniter. Borland's compiler was released late last year The Windows support will be really No rewriting here

Onleans & Lot TAT DOS Extendes late necessaries out the Windown front end onto lessacy DOS neverans without having to remaits the entire program second ing to Phar Lan officials Support for Borland's Co. A & took lets developers take advantage of Miand Come 's Windows NT while also using Royland's compilet debusiness and marchine libraries

Features also supported by Borland include Demanie Link Libraries threads and multitasking which developers can so ress using DOS-Extender to procommunitation the familiar context

Phue Lab's development kit includes TNT DOS-Extender, Microsoft's Code View 32-bit debugger and Phar Lao's 200 CDC Due sousses level debugger TVT DOS-Extender also supports Microsoft's Viewal C++ 19-hit edition and other 39. hit compilers. Version 6.1 is shinning one

and costs \$195

GUIS

CONTINUED FROM PAGE 75

enforcement can range from "gentle to gestago," depending on the corporate culture, Schaffer said.

Ingham, resigned to the fact that it will take years for the CITI Steads of to be wide. ly adopted by the bank's developers, had this advice for others: "Getting the standued done was the easy part. Keeping it going is far more difficult. Save your onergy

Getting a real GUI Despite the challenges,

many companies would like to-have a GUI standard but do not know how to get started Schaffer said Some companies may believe they have a GUI standard be

cause they use Microsoft Corp.'s Windows environment or the Open Software Foundation's Motif but all they really have is a windowing manager that does not specify what should happen within the windows. Schaffer said

Others buy a \$2,000 electronic document of general design principles or rely on IRM's Common User Access guide lines he said but neither is specific enough or tailored to the company.

Schaffer argued that companies should create a GUI standards committee to come up with screen designs that

fit the particular business needs (see chart name 75) The committee muck can be contentions and man her will have an emotional tie to particular colors and fonts, for example - but writing the standard is ac-

bually the casy part While it's appealing to assume that consistent us er interface design can be Eric Schaffer of Human accomplished by producing a style guide and putting it in the hands of designers and developers, in practice it's not so simple," wrote Robert Root, a technical

staffer at Bellever in Piscalaway, N.J., in a recent research paper. Root said the critical success factor is creating a process for consensus-building and "buy-in" among a variety of stakeholders; otherwise, developers will not accept and adhere to the standard.

detabase which wise developed in

basedone, wants was developed in sousie supported what is on their mapeople supported, what is on their ma-CHIEFE REAL WEST IN GO THE SEC "We built a database of issues and car As problem repolation not just on the Dan

Contractor to be to an the more mostic the more grown way and it outpool about it?" Priodman

Support

CONTINUED FROM PACE 75

The Mass Engle. tion a bunith come so and the first to the Seaborter Minn in implementing on co-

imprementing an on-line problem-track ing parkets according to Brian Shom. Nie computer evatems manager. This will enable end paers to submit problems and potentially find "instead of hopping ma " bacaid

On the other hand. the knowledge in Shamblin's moun in "so execuliated" that he keeps in contact with other sites only on an "informat ba-

Stillachallenge

But local support within the context of centralized IS is not easy to implement at all cites At New York University for example.

adopting support for individual sites and departments under the framework of central IS has been difficult due to the "federated nature" of the oniver sirv said Stephen Tibor, assistant research scientist. Each group, he said, has its own agends and needs. "Organic tional independence is a challenge."

Newertheless there are advantages to the idea of local support within a global interestmentary A placeme definition of who does what supportwise can be an important cost saver according to Bill Walton, service director of distributed comnuting at Real Decisions.

Brief

Forecross offers migrati Perecross Corp., a San Pre based software company, bas introduced Convert/VSAM-to-8Q which sytomates the migration of

VSAM applications to SQL datab

Providing local support staffers to addraw local needs ensures that the people areas local needs ensures that the people is being english to meet hosiness reas being appeared to meet numbers redan emerce m.

Power link. On the other hand links to the central or-

manipular store the level consent monde more firepower if they need it. In addition central support can act as both a re-

The rost of doing histness ng to a survey of 40 IS sites, support costs for distributed

has as sim about passes where the seventure of the

pository and a distributor of informati that coordinates solutions at the far Supersites.

A range of new training techniques can also cut down on end-user support requirements. Chase discovered that a variety of training methods belp teach

"We find that you can't get by with just one training method: you need a whole spectrum of training tools," Friedman said. These methods include computer hand and hands on training and video There is also a move toward multimedia

training at Chase At New York University, Tihor page a combination of online and class training and standards, in an attempt to limit people to "work with the stuff we support so they know it cold - a simple trick but use that many companies sometimes formet."

ials. The product offers the statements to create guired SQL tables, indexes and ewa, data migration so Cobol ograms and SQL control state

and automated migration of VSAM Cobel programs to standard Cobel SQL. The tool runs in MVS and OS/2 oments and is shipping how

Partors Internation

al: The hardest part

is making the GUI

design standard o

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Turn to Page 120 Progress introduces application developm

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An informal poll of 236 large U.S. companies found almost equal numbers of IS leaders from technology and general business backgrounds

RELATED FUNCTIONS FUNCTIONS



gyone not unplugged for the last few years knows that winning companies must blend technology and business. The his question now is. Whe'll he the miv master? Answer Not procesarily

Consider some recent and

Fight months non De vid Furthwas just anothor neer at Turner Corn. Today Furth, a civil engineer, bends technology at the \$3.5 billion intornational construction firm When Rank of Boston Corp.

ousted Michael Simmons last fall it didn't neek another journey man chief information officer superstar Instead, the \$32 billion bank placed Vice Chairman Ed. ward A. O'Neal, an experienced and information systems-saavy banker at the belm of its 4,000 person technology operation Want more evidence? General

Flectric Co.'s first corporate CIO. named last summer, wasn't a ca reer technologist. She was Helene Runtagh, a says. "I've been on the other side of the feace. I

lifelong General Electric employee who rose

the head of General Electric Information Services: the memorandomerate's IS unit.

"Rusiness is looking for leaders someone is can talk to," says consultant Joseph Ziskin. who receptly completed a detailed study of 50 CIO- O-M from outside 10) for Frent & Voront

"The traditional Deformation technology track is not preparing people for this socition. There's no exaction that in many large orga-

nizations it's tomeher than ever for techies to erab the technology crown A new Commuterworld survey of 236 lares

It is companies found that executives with men eral business backgrounds now bold almost balf of the top technology posts. Although no mod learn studies exist most serve that's nearly double the number of a few years 670

Observers say it's too early to tell if "nontra ditional" technology bouses are a passing trend or a major shift. Some procedute that the general manager/chief technology officer mod el will eventually replace CiOs altogether. (So for titular CTOs remain rure.) Many believe the nearly of posteroditional IS managers will contions to moun

The new bened ion't right for every commany. of course And new decentralized structures and technologies, notably client/server, are making a single technology czar far less impor Inst in come compenies

Nonetheless, the popularity and jonewity of generalist managers in several forward-looking 15 Intensive industries - including banking financial services and manufacturing suggests future directions for technology leadership in hig organizations. Your next boss

nould be one of "them A CROSDREAM

it's easy to see the appeal. Generalist managers are a CEO's dream: good motivators, good communicators and team players with a fanatleal forms on the bottom line

No wonder frustrated top management enlisted so many outsiders to shape up loosey. goosey IS groups or to better manage strategie

IS assets during the last half-dozen years. Consider how Edward L. Goldberg, a 33-year Merrill Lynch & Co. veteran who took over the firm's technology helm from DuWayne Peterson in

1990 describes his mission "Having been involved in the business really gives me a chance to say. Wait a minute, what will that preity emulation do with the bottom line?" Goldberg says. "We spent a hillion dollars here on technology in 1983.

We need to make the partners aware they need to carn money to pay for it." Not exactly what Joe Cobol might say Business types also

come with another invaluable asset: instant connections and eredibility: "I'm sort of an insider." Furth

understand what users do." through several assignments before becoming These folks understand the "alignment" be-

THE

TECHNICAL

ISSUES HAVE

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CONTINUE TO

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THRONES.

tween business and technology Furth for instance recently held a conference in Dallay for his 70 ton users. "Users need to take ownership

At Chemical Banking Corn in New York Denie I O'l oans conjunction provident of IS rests. tanks (author ton assessions including Vice Chalamon Ed Miller and Bill Harrison to "con-Chairmen Ed Muier and Bill Harrison,

of customs "be declared

Those falls also embody alignment Their nosts bring close, easy access to top managemost O'Neel for example is a vice chairman. Goldberg reports directly to Merrill Lynch's

No wonder many CEOs have decided it's wiser to teach business people technology than vice come. Add the inability (or unwillingness) of many IS correction to expand horizons and the temptation to say "rampage CIO" becomes the temperation to may suge

CIPSERVICERURTSIS

19 must shoulder some blame itself says I. Paul Quellette president of Quellette and Auposister Consulting Inc in Bufford N.H. Quellette who spent 34 years in too 15 nocts at Polanoid Corp. Raythorn Corp. and others.

save many traditional IS beads pay only lip service to team building emocwerment Total Quality Management and other important practice.

"ClOs ... throw two or three little programs but there "Quellette says "But there's no real -

All this hops the exection: Have IS managers lost the helm of their own heat? Are they deemed to be first mates - or worse? Not necessarily, according to IS observers.

RILL LYNCH



II TOORIN BY empire size. David Furth is half the man his predecessor spas Rut this "outsider" and former user doesn't seem to care

and practitioners. But they caution that IS leaders must reorient quickly and act accordingly or fewer will qualify for choice top spots. Sixty or 70% of the people in top IS jobs still

fondly remember the glory days when the big

Three years ago, mainframe downsizing half 10 head count also fell from more than CO4- 90

Traditional IS kington buildon mids: Transitional Is kington builders might one who resolved former IS director ok Shell had enring Responsement, he

wreer "was looking to find an individu understood the core business and who

ring a level of practicality," Furth says At first, traditional IS staffers were al al case Purth who joined the New York

of from might out of college in 1985. On the day before I started this no us a user going through all the tria lations of a user," he recalls. et aflore "tree

ays, he began to earn respect.

Furth, who remorts to Chief of Staff Gar-

more has been ered away at the es of productivity, service and alter He sees his role as being an in

between the service provider and custom the IS may Deinel isolated from by

date conten was theirs " eave Reverly Linher. man president of Halbrecht Liebertran Assopinter a Stamford Conn executive recruiter vializing in IS. "God forbid if they lose their iob. They were very competent people for a difrentera."

Katherine Louis vice president at The Research Roard in New York, says companies today want the brightest stars to direct technolor "The emphasis is on putting a string of canable records in the role " says Loren whose prestirious consortium includes 90 of the nation's biggest companies. "Sometimes they are

pical sometimes they are not." Lieberman and others affirm that CIOs with strong business backgrounds are much botter in today's job market than career technologists. The most desired candiates bear MRAs. have headed a large IS division and boast experience with a big-name consulting firm such as

Andersen Consulting or Booz-Allen Hamilton. A recent survey by the 90,000-member Institute of Management Accountants suggests it remains difficult for IS leaders to be considered perionaly for more nowerful posts.

The Montvale, N.J., association polled 350 11 S. firms about attitudes toward IS, says Jonathan Schiff, a consultant and professor at Parleigh Dickinson University who conducted the study According to Schiff, most organizations still remaider IS a cost center that must be kept closely under the chief financial officer's wing.

The CIO role has not captured the imagine tion the way the CPO has," he says. Only 5% of companies contacted had IS groups reporting directly to a CIO.

That dismal showing squares with the criticisms of CIOs by superstar consultant Tom Poters. In his latest book, Liberation Manage New boss, page 82

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Now hose

ment Determ criticione IS managers for wast ing efforts during the last two decades on unimportant tasks Little wonder Peters says. that the thirds of 19 leaders have bad their jobs downgraded for failing to meet expectations

FEET OF SILICON ORCI AV Despite their streogths, generalist technology managers have their drawbacks. Some are

dangerously lightweight in technology knowl-

That can be a deadly flaw according to Charlotte S. Stenhens, an assistant professor at Corouse o. overpress, an assessant projessor at Co-in phase College in Georgia who has studied one. secretal Cities She notes that a fairly high level of technical insight is crucial for both credibilby and mod decision making

"ClOs need some technological expertise to ing flat on the job or if they're being snowed."

Stanbane save Others worry that business-minded CiOs might focus too much on the short term and neadapt the miles but appoint areas such as infra-

Indeed some cay the ensuring complexity of client/server graphical user interfaces and arobjectance may be excised the needeling back toward may be bringing the people of

"A good manager can manage anything says John Rockart, director of the Center for Information Systems Research at MIT "Rot they can't manage IS nearly as well as someon who understands the technology undermeath." Re-engineering evangelist Michael Hammer

agrees the ClO/adminstrator role is fading "IS is no longer an unmanaged cesspool which it was in many organizations — no budsets, no plans, no structure, just a bunch of backers handing around," says Hammer, head of Hammer and Co., a Cambridge, Mass., consultaner "Now I think we've got to go havand solving last decade's issues '

Hammer says IS leaders must now lead the transformation of IS while representing tech-



nations to the rost of the business.

A new British study arrives at similar conelusions "Successful valor-adding ClOs invariable some from the IS function " wrote researchers Michael J. Rarl at the London Southeast School and David F Formy at the O'r. faul besting of before the Management The pair studied 14 successful Citis and hand that business transminstr worm more likely to founder in CIO roles. "A lengthy apneenticeshin in the IS function, particularly in

THE RESERVE AND THE PROPERTY OF THE PROPERTY O

avotame analysis and development, is the sppropriate background for a CIO "they say Others note that the technology door swings both ways. As computers and networks play a himser role in companies, techies have a better

abance for advancement At Marfower Transit, Ioc. CIO and Senior Vice President Simon B. Morse also oversees human resources quality printing mailing. mounds and amoral other non-IS functions Similarly James B. Gustafaon, vice president of 15 at The Stanley Works last year took over the cornerate traffic department for the New Britain, Conn., tool maker Both men, earrier technologists, say they do WANT

erecution

STRUNG TECHNICAL TATIONE PERSONAL 47% ----

COMPANY PROPERTY.

WHAT ROSSES

44%

36%

26%

and facilithmentanced by opticident "Today there are more opportunities to nous, more are more opportunities to move into the user organization," expecially in

the leaves weeks Morro neve "There's on long. are limited compressed MIS career noth." Pull there's no doubt that competition for

Still, there's no dod In the past, pretty much soory technologies

was a condidate to lead IS, says Ron Brzezaski. former Oneker Outs Co. ClO and now principal at Transformation Associates, a Wilmette, Ill. committees: "Today the figure is more like 30% to 40% "houses "Still not a had someth He and others also note that company needs

change over time. "There isn't a singular profile for Citie It's very much tied to company needs in stame of technology development

Of course, oot everyone considers the growing business presence had news - or even an ing obtaines presence one have — or even in issue. "whoever is capanie should have the top lob." saves Kevin M. Smith, a project manager at Burlington Air Everess in Irvine Calif. Plus. many in IS have no desire to become a high-lev-

cl manager, Smith adds. Gretchen Paypore, information technology manager at Niamra Paper in Niamra, Wis. "We're only a small energian DWho's du ing to be CRO is not a highest berg

And CIO women be's don't seem too discoon aced Nearly three-fourths of 1,400 people noticed by Commuterworld united hours of becomings ton-level IS manager, And 81% agreed that "IS offers an excellent career track

Certainly the old "data processing manager" iob has become hig and multidimensional enough to provide trouble for CIOs ralled on to serve as pegotiator, research and development director, outsourcing manager, visionary, change agent re-engineer and utility manager. Frankly, IS could use the help. This week, a Deloitte & Touche survey will report that CIO turnover [17.5% in 1992] has risen for the sixth

tre inmedibly difficult to most expectations in this career" says Jeff Pleys, a Deloitte & Touche partner in Chicago who beaded the survey "A lot of people are cetting sopeczed."

NO.WIN SITUATION

straight year

Others wonder whether enyone can succeed in the role, "Regardless of where (ClOu) come from, they are most likely doomed to failure, save Paul A. Strassmann, a New Canasa Conn committant involved with IS since 1966 and a former Department of Defense CIO.

The problem Strassmann says is not that one kind of background is better preparation than another The real issue, he asserts, is information politics. "Is the data named by the local lords? Or is

data a commodity that is a corporate possession? It's the equivalent of medieval wars." In the absence of clear corporate governance. CIOs will continue to fall victim to competing factions buttling to control information, Strass-

in the short term, experts say technology houses, recordless of background, must imply ment solid business practices, deliver stable basic services, develop strong second in commends and create change

If you don't build the relationship with corporate America and belp the organization move foward." Queliette warns, "the CEO will find someone who can."

The bottom line: The right person in the right lace at the right time will find oo shortage of adaches -- and opportunities.



business" twic.

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RAIDION LT can be stacked up to seven modules high for convenient desk top use RAIDION

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to attend one med this old store

A swindler got a list of 10,240 investo ed a list of 10 volatile stocks. He wrote to 5, 190 of the investors that Stock A was shout to en un. He told the other half it assold on down. After helpfort (0.740) tOtimes, our scam artist had his real tar gets. He sent the t0 investors who sured the 10 rounds of cuts a letter read

ing "I prodicted 10 stock movements. Had you invested \$100,000, it would be worth \$2.6 million. I now have a factout ortunity Just send me \$100,000 to

Reportedly eight of them did The moral. Any large set of random events On the contract of the contrac Share on them and those will seem to be a prowerful influence where only random

WALLEY DED sa prac work. want does tass bay

neering? Simply this: If enough people try some thing, some will succeed dramatically if no one ations the failures it mentions the lastures, it CONTROL SECTION IN new method to develop strategic systems: Wear strategic systems: we parameter Tuesdays Rywriting a presti-

soy writing a presti-Tuesdays men I reconsde 20 panies to try it. Norilv about eight would ve average results, four would do a bit better and four a hit worse, two s lot bet tes and two a lot some. Naturally that and with Pink Shirts & Asparagus (PSA4) as well Two firms have now achieved dramatic success union PS&A

They can never know what might have hangened without it. They are firm bewee in PSAA and are eternally strateful to its inventor We downment PSAA benefits in ex-

ettendetail Indiat fancy beochures with testimonials from the two users. The reminer sells out The two ocers an

none Differ Super et est nom DSAA nook pear raily in increase a few will one and demonstratly 1 imore the other 45 ceed dramaticiary, I ignore the other so. () peur saures were stanned, meir aspara eneckers. My enruhood is assured. My

prunood is assured. W There is more to busi Hara's my new neur process record ness process re-eugand asperagus Retern. very, such as the Deto be and Touch a common of 500 CIOs reported in Commuterscorid has March show husiness

process re-engineering ruishable from rando Selective data Most business proces

resenting or projects do about as well ne would be expected of any new system Some do better a few a lot better. Some do moreor a few a led Worke So why don't we read about the horine 20th in the middle or the 19th of dispatent

Recause pobody is proud of them. If you ask a corn about them you'll hear the business process re-engineering equiva lent of stained shirts. The surfame are read about are all

from the positive tail of the curse. There is nothing new about the business procourse-engineering concept. Our ancestors re-engineered food production when one in farming. Henry Ford to an discount anto-mobile manufacturing by introducing assembly lines. Some firms are now mg oesembly times. Some investare now ont. Re-engineering has been here for cons. Today it is linked with JS. That is fitting Creating re-engineering opportu nities requires rapid change and wide annieshility When fractional horsepow englantain motors were new companies re-engineered processes around them.

Today computers and communications are in the spotlight. They permonic the company to anyone can play the husiness process re-engineering earns - unlike process re-engineering gone much use outside a feeter. Hence most re-engineering opportunities today in.

volve computers and communications. What then should you do about busiwhite, these, should you to about o means re-engineer business pro every chance you get. Follow the mirus midelines: Start fresh, think "out of the box," forus on processes that matter, concentrate on the value those process

seadd ate ate Rut when all is said and down a sucreached business process re-engineering personal is 10% solid renteres unabytis that is intelligently applied and 90% common sense. If you peed a seminar with a guru to tell you that, well, it's your \$895.

Mallach is an Difaculty member at the Universi ty of Massachosetts at Lowell.

Triangle Corp. in Palo Alto Calif. bas named Productob W

Cincinsati Bell Telephone has appoin ed Rudolph J. Frank senior vice presidept and chief information officer. He joined Cincinanti Bell in 1988 au senior vice president of technology and netmore consisse

Frank also served previously as tech nical manager at ATAT Bell Laboratories. He was selected as a Sionn fellow at Stanford University and serves on the board of governors at the Communications Society of the Institute of Electrical and Electronics Engineers, Inc. He also chairs the board of the Cincin-

nati Area Graphic Information System, a mership between the city of Cinci nati. Hamilton County, Cinein and Electric and Cincinnati Sell Telephone. The partnership was designed to provide an interactive and comprehensive database information system to en hance the development and infrastructurn of the Greater Cincinnati area

Michael S. Heschel has been appoin or vice president of information sys tems and services at Kroger Co. in Cin nati. In this newly created position, be will be responsible for directing the comnany's information systems and coordinating logistics and re-engineering procrama. Heschel was previously group vice president of MIS.

Rook chief technologyofficerat its Wal them Mass feelfits He movemble Larry Harris, who left Trin rio to start his own outerwrise

Donald A. Marc-

and, dean at Syra-

Rook Joins Trinzic from Price Water bouse, where be served as leader of the Advanced Computing Technologies Drawtion in Price Waterhouse's Natio Client/Server Initiative program.

> case University's School of Informa-Lioo Studies, will step down on June 30 to nomed a senior face). ty position at the tute for Manag

ment Development in Lansance, Swit-Currently serving as vice president for ternational relations at the Society for Information Management (SIM), Marc

hand's move to Switzerland will accelerate the society's progress in forming additional chapters overseas and increase e opportunities for SEM to partner with other IS organizations.

Michael Grisch has joiged Northwest era Travel in Minneapolis as director of information services. Prior to joining orthwestern Travel, Grisch was in-

wheel with implement in rachnology in composite and start on contations of Honeywell Inc

Frie Schmidt has been named to the nombremented position of chief technol ory officer at Sun Microsystems, Inc. in Mountain View Calif Schmidt was now. ously head of the corporation's Suz Tech nology Enterprises

Nathaniat I Johnson Sr has been camed director of IS and CIG at Law

School Admission Services (LSAS) in Newtown, Ps. He will be responsible for managing a stell of more than 35 rom or programmers and systems analysis Johnson will also establish and maintait a computer network and telecommunieations system for LSAS the operating arm of the Law School Admission Coup oil The council is a memberable organization comprising (9) law schools in the

II S and Canada Prior to his recent appointment John son was recruitive director of the IS department of Prairie View A&M University in Prairie View, Texas. He was formerly manager of the information management services division for MS waukee County in Milwaukee

David D. Harrison, 46, has been name senior vice president and chief financial officer at Pentair, Inc. in St. Paul, Minn., a manufacturer of industrial produ power tools and paper products that is majority owned by General Electric Co. He succeeds Jobn H. Grunewald who re-

tired. Prior to joining Pentair, Harrison was vice president of finance and information technology at Cameo, Inc.,

Gerard H. Mesnel, 56, has been named to the newly created position of worldwide executive vice president of advanced technology at Standard Products Co. in Cleveland. His responsibil ities will include product and process de-

William R. Spivey, 47, has been named vice president of systems and technologies at the AT&T Microelectronies unit of American Telephone & Telegraph Co in New York He succeeds Curtis J Crawford, 46, who was named president of ATAT Microelectronics, Prior to join ing AT&T, Spivey was president of a Tektronly inc unit

George B. Beitzel, 65, has been elected a director of the Computer Task Group Inc. in Buffalo N.Y. He succeeds Robert Stophenson, 55, an IBM vice president and president of IBM's World Trade Asia Corp. Beitzel is a retired senior vice president at IRM.

G. Giens Henry has been named dire torat the PC Division of Mips Technologies, Inc., a Mountain View, Calif., division of Silicon Graphics, Inc. His responsibilities will include develop rocessors for PCs. Prior to joining Mips Technologies, Henry was chief technology officer at Dell Computer Corp. in Aus tin Texas.



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The CW Guide to RAID

THE RIGHT TIME FOR

IN ITS SIX YEARS OF EXISTENCE, RAID HAS INSTIGATED MORE TALK THAN IMPLEMENTATION. BUT WITH DROPPING COSTS AND MORE INTEREST FROM PC LAN **ENVIRONMENTS. THERE'S REASON TO RETHINK THIS** STORAGE TECHNOLOGY.

Ru Avery Jenkins

f the storage market were the Winter Olympics RAIDtechnology would be women's cross-country skiing. It is unknown and improved by the majority and it renains a difficult sell to a mass audience.

RAID (redundant arrays of inexpensive dieke) is the 1988 brainchild of three researchw of California But while the d for a good while come been available for

e multiple 5%-in. e ec e cindle virtu - Smaller arrays e and larger sys-G bytes of storage eveteme mov offer

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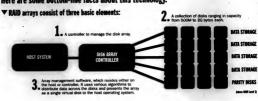
INSIDE





How RAID works

Confusion abounds on RAID levels and types. Here are some bottom-line facts about this technology.



■ The management software distinguishes RAID arrays from stand-alone disk storage devices. Its main job — data distribution — actually involves two

MAPPING, in which the system translates the army's virtual disk addresses into physical disk addresses. As an I/O request comes from the host, it is converted into syntax executable by the array's physical disk.

PARITY, which makes it possible to reconstruct data in the event of a disk failure within the array (TBIs is not) persiable on RAID level above RAID 1) During a write operation, the system records parity information about the data on a separate disk; prid is a limit of the control of the system of the system of the conbourt of the system of the system of the system of word. Parity does require some amount of overhead, ranging from 39% on RAID 1 to somewhat less than 25% on RAID 5.

■ Where the management software resides further distinguishes RAID systems. There are:

SUBSYSTEM-BASED ARRAYS, which com-

cute management tasks in firmware on the controller. The controller is usually a RISC processor or, in some cases, an ASIC. Also known as "hardware RAID," these systems have the following attributes:

 Higher cost. Costs range from about \$2.50 to \$17 per megabyte.
 Portability. Usually uses standard buses such as SCSI

Portability. Usually uses standard buses such as SCSI to connect to the host, allowing subsystems to be used in a variety of hardware environments.

Hot-swapping and other reliability features. Additional features may be incorporated into the subsystem to enhance reliability, for which users can expect to pay a remitter.

Hot-exapping automatically substitutes an unused, available disk in the event of disk failure. Data is automatically rebuilt with little or no service interruption for the not user.

overnouses.

Predictable performance. Because hardware RAID employs its own CPU on the controller to execute management tasks, performance is not affected by the server's communications and applications load. Conversely, the demands of the disk subsystem do not influence apolication performance on the server.

HOST-BASED ARRAYS, which concute manualty

most tasks on the boot. The disks in bost based arrays are standard disks connected by conventional subsystem barebarre components. This is also known as "soft-ware RAID" is that tributes include the following: "Lower cost. At the PC LAN level, software RAID is extraordinarily cheep compared with its hardware costain, ranging from \$500 to \$1,000 for the nothware listed liberature and the software in the contract of the software in the softwar

Because most of the hardware would be required by a non-RAID system, the cost of software RAID is only slightly greater than the cost of regular storage. And as the size of the array increases, this differential deereases as the added software expense is spread across

a greater number of disks.

- Unpredictable performance. Because software RAID executes management tasks on the bost, performance varies with necessary levels.

- Limited functionality. The interface between the disk and host comparers more limited than with hardware and host comparers more limited than with hardware.

RAID and can affect array functionality. For example, set software arrays canned provide readinated synchronizate tion of the disks, which can influence performance. IoConnection to votabile software exvironment. Iois send of appearing as an standard SCSI device, us most hardware RAID used bandware RAID used in the management of the send of the

m ploy RAID.

RAID levels further distinguish systems from one auother. See book at right for more information.





RAID Level 4
to the base of the common that the common through the com

RAID

CONTROLLED FROM BACK 91

terro benefices to mide accompanion. Its exmore on their on he several times must on then an equipment property of singledrive storage is a hurdle, as is its loboung complexity and the lack of sen-

ionerent compactity and the tack of ge Dot all that could change Not only are this year as did Digital Engineered Corn. RAID priors spins down (see story at A number of smaller windors have re-

right) but RAID intennet in also in ornaving among at least one group of nears — those in PC

LAN confronments The reason for ough interest le in the numbers in 1002 the grounds server disk cannetty was only 2.5G bytes. was only 2.3G bytes. according to Perinheral Concepts, Inc. Celif so "e network could hardly justify wing a disk array using a usa array. president of Perinh osol Concenty But by 1995, so everser-

cite will have 40G to

store to store managements were storage, as storage requirements grow, dancy become more apparent The majority of new RAID products

the majority of new iooto products

IDM injured the PAID bands name in the IBM joined the RAID bandwagon in the mouse or last year with its announceenvironments. Data General Corp. added I AN encability to its Clarion line earlier

lossed RAID pendmaterial and the fire MATHEMATICALLY SPEAKING DC LAN and Novell

Inc NetWare emi-

Mhile maden many fidelity be ready to sell RAID technolone the mestion offic rate discretion whether meers are winetour users

The PAIDelite Todate RAIDhas attracted only those willing to pay the technology's huther monto in not um fon its costs in recursion its

of protection example of a traditional RAID armiraability advantages. "If you think your tion. Shut down an assembly line or prodata is critical PAID ones and it could cost you \$100 000 per looks like a neetty

One harrier falls - cost

Not only do the arrays themselves offer

Not only doctor arrays the more from between

faithire and mean time between data loss.

but renders also add fault tolerant fea-

tares such as redundant controllers.

power supplies and nonvolatile cache

RAM to provide an even greater degree

minute. But some users are expanding

A shop-floor control system is a mod

and deal since it provides a lot of thretection against data loss," says Rob Katvise precident of Disk/Twend in Moun-

their use of RAID to general business

John Calhoun is town leader of the information systems architecture team at ATAT's Atlanta Works division, His organivetion uses a RAIDLevel 5 array from ECCS, Inc. that is linked to each server on the NCR Corn-based shop-floor sytomate multiple SCSI buses

However having had experience with RAIDio the crucibie of the shop floor. Calsoon says he is now preparing to put a RAID arrey on the division's office avetome warning typical office applies tions such as word processing and mons such as word processing and surreadsheets. This is despite the fact

RAID nage by



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RAID

CONTINUED ERDALPAGE 93

that his 9 MD stagence Tis two times as expenthat his icold storage is two times as expen-

Six Calbony is comes down to decreased Tot Canada, it comes doon to determine management custs with a not-swapping array that automatically reduces data from a mices disk onto a ready spare, camponi says in war

to a late on a kalled nomen According to Calbour, the cost equation is Agreeding to Chinoin, the cost equation is has more hardware

Choosing RAID

At Kally Sameray, data availability and raised mouth were factors in its decision to employ RAID technology un a network running word nowes, metand spreadsheet applications

Dave Shiner manager of technical services at the temporary agency in Troy, Mich. has beone assementing his Bell Computer Corp. servon an Versall normaries with RAID storage sub-

systems from Storage Dimensions. Inc. The network autropets Nitt mers on eight file servers, with stotage requirements remained from LAG to 4G bytes per server

Many of the applications are stored at the somer rather than at the local level. Shiner server rather than at the mean rever, conner tem mes down users not univ lose access to communications duty but applications as well

'One of the higgest pressons we needland RAID was just for the reliability." Shiner says. "If noe of the drives fails, we can pull it out, slap a now drive right in and basically the users death active right in min

Typical configurations

ENVIRONMENT	USERS	REQUIRED CAPACITY (to pigabytes)	BEST ALTERNA- TIVE
Office (small or large workgroup)	100 users 300 users 300 users	124 286 200	RAID 3 RAID 5 RAID 5
Transaction processing	Hotel reservation Arrine reservation Betail chain	2 20 100	RAID I RAID 5 RAID 5
Decision support (multiuser interactive)	300 employees 2,500 employees	3 30	RAID 5 RAID 5
Imaging	20 trees 100 trees	3 15	RAID3 RAID3
Large: sequential EO	Imaging site C4D/C4M site Vultimedia site	15 6 30	RAID3 RAID3 RAID3

and a share of a series of a series of the s with the old single-arrive system, replacing a single 1G-byte drive took tour to the nours, in-Change case. "It was reductions. — The amount of time it would take us in recover from a draw

White it was rehability that provided the unnettee for RAID at was rained storage demand penus for rCAID, if was rapid storage demand relow

"Our storage requirements are greatener 75% a year. Shiner says "it's really pretty amazin your, confier says it is rounty pretty annuaing, we re usually 60% this, no mixter

Crossing the drive line While users such as Shiner and Calhoun are

while users such as sumer and casean are ity from their arrays, they are not accessarily

any trong their arrays, they are 'le most RAID configurations, the nectormanor to not the performance you would get in

a single dray. Katziye said. Of course there are executions to that rule mitteems beach of RAID operado on many norformance for specific types of annivations rees

wheat the mostly But what generally impedes RAID speed is the responded arount of data messaging that must occur between controller and disk. As the

date is bushen up, purity is extablished and the date in finally mention in is initially written ware" to increase performance, such as ito

percent data ellocation algorithms, says Dick Witnest consultant and adder of "The Indepen dent RAID Report " Englements of the PAID review is not currently a higeoneern in most LAN environments.

where more typically it's the network itself that is the detectronsfer buttleners. But in the near



Compag ProLiant server provides good RAID support, but is still pricey

COMPAO'S PROHANT

The Compac ProLiant Size of we BAID and storage

wadded that pricing was a bit her than they wanted and

sizing, it only made sense that last year Compaq Computer Corp. in Hou its new line of ProLiant LAN servere with the hells and whistles to which information systems man-

saves have become accordanced. Primary among those features - in both the newer ProLiant and the older DroSimis servers - is an integrated combination of hardware and software providing

RAID support and disk mainte-With the high-end models of the ProLiant servers, Compaq pro-

Controller-2 (IDA-2) and software functionality, coll mèr no Insight Server Management, The IDA-2 is also evallable as an on tional add-on to other Compag The 20 his IDA-2 controller which is an FTSA hos controll

supports RAID Levels 1, 4 and 5, It des a dedirected NEC Corp. V53 processor to control opera tion; 4M bytes of battery-protect-ed, writeable disk cache; and firmware that supports a disk array of three logical drives. Compaq now sells drive array pairs in 680M-and t 24K-byte units.

The evaluators who are

this survey included technical stall from a bealth care firm, a petional professional association, a management consultancy and a university. They were using various models of the ProLiant with alightly different disk and memory

reingthe Compan IDA-Posmtroller The format for this evaluati one designed with the natio of Howard Rubin Associa

unters said reliability of the

IDA-2 subsystem was nearly buloof. It includes support for RAID 1, 4 and 5. The batte red disk cache can maintain data for up to eight days if peoded. A pelection of software diagnostics and maintenance programs can amically repair bad sectors o track of drive faults, monitor the IDA-2 and automatically restart the server

Consultancy: "I haven't had a ingle catastrophic failure in six

University: "It runs 24 hours a day with an average of 125 users

RAID subsystems, which by defini tion sacrifice performance for re liability, are often overlooks

COMPAQ RESPONDS

Mary McDowell responded to issues Demand has shifted away from the IDA-2 to our newer Smart SCSI Array

Controller Smart SCSI puts many of the features of the IDA-2 into hardware, and SCSI drives are less expensive. However, customers who have standardized on the IDA-2 continue to purchase it.

fature Wilmed ways with multimodes someone nuture, without says, with multimedia servers chent works to trop or or or or need a fairly langua ruma pafea nome to fough his fellowed a starry

The cost of portormanous

In their onest for ever-higher performance forthe their quest for ever aigher performance ing od a ruther signification in RAID's much touried due rather size The correct was to remove perfermence for

ures is to employ strable eaches in their contradior. The bas led to a but Wilmot towns the

The PAID waste halo to covertually the sum in The RAID write note is essentially the gap in and from an a smallerdusk system, a noncer factare during a write operation — between eachthe and the physical write — can be a problem Bur with BAID. Wilmut ways, the problem is Dut wan real

to most forms of PAID, the draw boods are not exactronized as the data black may be written before the parity block. Thus, an outage between these two operations can create an out of newty condition with the existent house unaware of it because the system

can the entire write fraction to our fac chart The result Wilmest save in that whom a dark is unbenomently an

built ness data will be narred with old nomity (on tion come), comes Ningthe data where the opt of rose the extrino occurrened

"Ha RAID 4 or 5 server suffered 10 outside and was doing extensive write eaching then it mucht have a few dozen to a few hundred out-of-parity stripes." Wilmot suys The only sure solution for this

mance met their expectations.

Association: "Werdo some trans-

RAID on the rise Description of DAID in particular emission 1992 1996

Popular applications

Transaction/database processing 37% Health care-related software 16% Finance / accounting / hilling Corporate records/on-line databases

speed. The ProLiant IDA-2 overthe system up and running comes some of this hiss with its AM-byte Array Accelerator Write

Cooks, which allows much history in a few hours University 'Configuring the performance than systems that controller for RAID 5 was initially prite data directly to a slower hard disk. Evaluators said perfor-- unobform

action work, and it seems as good as our old non-RAID server." Technical support The evaluators had little need for technical support. However, they concurred that they expected excelient support from Compan and

Health firm: "We use the Compu-Serve support. That's fine for us." one helfthat

Installation Installation was a little different

got it.

from other corner and RAID sub-One evaluator said he was some-

what stymied by Compan's documentation; another said he found the documentation lacking in needed technical information, which he then had to obtain from Compaq. Otherwise, the evaluators reported no problems getting

Association: "We opened the

hox and swanned everything over

Desnite its re-emphasized an proach to "value pricing," the evaluators said the ProLiant, the IDA-2 controller and Compag's Insight Manager maintenance software were all in the moderate price range. They spent from \$15,000 to \$50,000 on their corner

RAID expenditures were shout Health firm: "The cost was not

preasonable compared to other RAID servers Consultancy: 'We bit the builtet on the [proprietary] Compaq

drives "

The ProLinat comes with extensive ntilities and diagnostics to monitor and maintain both the server and IDA-2 storage devices. Optional packages provide more reporting and management ontions the makestory said University "The tools are there to solve most problems and to keep running."

Compatibility The IDA-2 is not a pure SCSI device and therefore does not support standard SCSI drives, the evaluators said.

Compan does sell a SCSI-2 interface for its services but It only supports RAID Level 1. IDA-2 users must use Compag storage devices.

Enhancements The evaluators, all of whom had longtime experience with Compaq products, said the ProLiant and the IDA-2 RAID controller were superior state-of-baset LAN server products. They said they liked the wide range of

configuration, performance and recovery options and said those options rivaled t from other manufacturers

Association: "This has I ells and whistles than other Co pag servers to the past."

medilem to to the normalistic cache memori protects is to use noncotaine ex

RAID levels are also construct confronts Not RAD revers are also causing contrision. Not only do we have RAID 0through RAID 5 but ulso render etterrete to impress left on data as all

RAID 5 Ples and RAID 7 are not recented as RAID 5 Piles and RAID / are not necepted as in fact described in a later reports, the cratical in isci, describeranta anter paper to un conjunto the a second narmy dark to a RAID Sorrey Trees ring a second parity disk to a teal children, Three disks must samultaneously fail for the data to he leads but you also get more used to orbead the lost), but you also get mercused overhead. alty on two parety blocks must be a retten for many dotte blook

RAIDIutures

If is mot such uncontinuous with RAID - the hard of an nomence and knowledge about how it and it was compared to the state of the stat PAID from a widow audiones

Despite these limitations, the market will block expand in the LAN comment became of the changing face of computing

constant PAID for a resolutional high-reliability application and find at employable to other upon nected engronments

Othors and a Shiner may dis-PARTY SHARE SHARE SHARE WAR polymer shellty and pould smooth forces, there to look for whoren





3-5

RAID FACTS

Cetimoted installed RAID storage in terahytes in

Installed canacity of all RAID and non DAID diel systems in terahytes:

9.512

ILS PC LAN reporting use of RAID Level 3 or 5.

Average annual growth of I AN server capacity through 1995

RAID volutions. These include Rus Lotte. Inc. Dynatek

Automation Systems, Inc., Storage Dimensions, Inc.

Storage Concents, Inc., ATAT Global Information Sales.

me one many N.A.Corp.) and outers.

The more risky solutions are the controller and soft.

Vendor choice can be tricky

0.0. 1.00.14

Chow that a two part he 130 or so you does solling DATDevo. tems today can be tricky business — especially among the smaller players in the PC LAN arena During the and counted many a half-dozen companies that are desired DATE solutions have discontinued their PAID products of disappressed on From the community DATA methods make then then match as in the following proper

In fact you should counte any reduct dant arrays of inexpensive disks (RAH) mention course with the bire of - too man ager: Be methodical in examining the year. dor's pessifications performance notes tial and monatum moninements - and don't neglect to check references

The best engaged in the LAN areas is to shoose a condon with a violate long team to choose a venuor with a vision long-term Usoally, a recommendation from one or two customers is adequate and most sys tems suppliers will provide names of ref

Harris almostic have a SCSL commet this survey you can numbase hardware/software systems from many trustworths compone

The companies with long histories in the disk drive or BC eventure markets all have proven track records of reliable products and can provide sufficient evaterus in. testration, Such companies include Conner Peripherals. Inc. Compan Computer Corp. Micropolis Corp., Dell Computer Corp. and Core International Inc Another set of system and software synotiers offer

J PAID Inval

I Amount of cache or s Amount of disk memory

tions (formula NCR Com.) and others

Rus type lot-energ/hot-swan canabilities for drives Redundant controllers/power supplies

ware solutions from smaller communies not totally inwheel in RAIDon a deale begin Marie de abassa a commed time condex make come year our find a nearly identical system from a different year. dor in case problems arise. If that isn't possible, sign on

with a laurer corrigo mean authorized by the manufacturer that has the design and parts to repair the system. Note the importance of buying a system that can scale - if your needs about it is boot to propose a system month forward to ensure that your planned or possible mouth requirements can be satisfied by the same on growth requirements can be satisfied by the same suppage ownering to the

to a University for midenness systems can actually be simpler than some PC LAN systems. For Unix, or SCSIbased systems. there are RAID software only systems the contract of deliver to a PAID confederation was convert a string or arrives to a rAID configurabon, usually KAID Level 3 or 3. 1 be ACK

numer Logic products do exactly unit.

Due to the technology level and recepted and devel. onment costs, the midrange RAID system compliers will generally be older more established companies. They include Micronolis Digital Equipment Corn. Data Genand Corp. and ATAT Global Information Solutions Generally, these systems will moning more interestion support than PC-

> Many of the LAN server evaluation rules annly to midrange RAID as well and are perhaps more important because the products are more distinct from one an other The following are some guidelines: a Do come the comments you deal with his several years of experience

a Chook whether there is more than our - CHECK MICHIGAN MICHOLIN a Chock references with current customers

 Prenare a questionnaire so questions to all of the inton female and the come Make sure the company offers some on-site warranty service during the initial ownership period Generally any evition broblems will show up early in the use cycle

Waid to remaident of Durinharals Resourch Corn in Santa Barba

of a RAID existent

beard motors

Cost, scalability and installation cited as RAID server weaknesses

FXCI IISIVE USER SURVEY he leading midwards over tems manufacturers offer a range of disk arrays for their own systems as well as Unix servers. A Computerworld survey of users of these products (see chart at right) found that the high price of redundant arrays of inexpensive disks (RAID) was the main complaint amount be 38 more approved Sculability and installation difficulties were also noted as weaknesses. And while many of the respondents touted performance as s strength, many others said the

I/O rate was much too slow Reliability was most often singled out as the best feature of RAID. Other strengths included performance configurability case of use and expendability First Market Research Corp. in

Austin, Texas, poiled a sample of nures from each of the featured subsystems to determine what the user community collectively viewed as the strengths and weak negate of RAID technology.

t.1.3.5,1+0 Tp to 29G bytes 100	0,1,3,5 Up to 40G bytes 38G			0,1.3.5 00G bytes
				(0)G bytes
100	385			
		400	NA	NA '
One to two SCSI-2	SCSI-2	SCSI-2	SCSI-2	SCSI-2
escsi	SCSI-2	SCSI-2	SCSI-2	SC812
3058 hyte/see.	16M byte/sec.	20M byte/sec.	10M byte/sec.	20M byte/sec.
24.5 by 10.5 by 30)	(29 by 12.5 by 28)	(24 by 14 by 15)	(14.6 by 7.6 by 16.1)	(10.5 by 17.4 by 26.2)
NA	\$26,891 to \$75,975	Starts at \$20,000	\$7,500 to \$18,100	\$22,190 to \$176,300
	24.5 by 10.5 by 30)	24.8 by 10.5 by 30) (29 by 12.5 by 28	24.5 by 10.5 by 30) (29 by 12.5 by 28) (24 by 14 by 15)	24.5 by 10.5 by 30) (29 by 12.5 by 28) (24 by 14 by 15) (14.6 by 7.6 by (6.1)

'Why I use RAID'

. In our prison way, severally a week Brothers there is one clear rule. There

is no time for demonstrate no ume of downtime. Dowllings exist of all hours of the dow need all house of the night; bunkers with a Mooday morning films deadline man home to work attracent through the work and A missed dendline our mean the dif

ference between a billion dellar deal and a notworking manager negative is about Querthoonet the bulg wanted adv That the early over already in my point as we cought a relation to our dark reli-

white dilument Most storous solutions for Novell Inc I ANs full well short of our need for epotamous operation - face it need to continuous operation — ince to have the known and cook cintos don't want to hour it

Disk mirroring, or even duplexang, doorn't get the job done for my in theory mirroring prevents a Novell server from falling due to drive (or fan or nower sunnhà problems.

In remotion though disk mirroring projects only your date, it doesn't more. anter continuous operation. Top often a drive feiture will also being down the corner strately and and itting down the doesn't crisin, you have so are swap meucou urive anyway. KAID 2 systems have given us a pow-

receive We can repositly 26 Common Comnutes Core System Dre company computer corp. Systems to servers, cacaton from another uneder PAID 5 proof a subtract tender to the shortest

ShoonIndenses However all RAIDS westerns are not cre-

We looked at many before choosing a unitable array (for actual list of vishle condidates was story about homeson Quality of the year of same first. We needed a warder with an international retro con reador was no successions pretoo small to booth company or common

redundant arrays of expension disks (RAID) units for our intermelional officer as well. Some vender communica were As for features of the products, some condone don't bother to make the driver removes don't began to make the drives score would do whon one failed. Another major manufacturer shound us an arrest with a cloud power cumply. They were amazed when I rejected it. I wanted dual owner cupolics and I wanted them to be hot-exampshie ton

The render acked "New often has The vendor asked. How often have you ever known a power supply to mar not may any tree a took document of to a numer carried does fail?" She asked me if I then wanted duel newer cords too (V course I did I wanted to play them into

two different power courses because amora falla tar Another has ceitarion for they allow our off hours our they allow our un-nours support stan to easily better

Manhorn come to stalke at 2 m m on a Setunday when I 2 a.m. on a Superday when i and By the time wy disappose the another and bring in an engineer described in absent on home and on

townstall to mark on the mobile But if the off-hours staff can simply slan in a sense drive described drops to see We also mented a product that morald automatically near a technician wheney on a debra feiled. You see, PAID is fault tolorest for sub- s should be the monte if two drives fail at the same time the same is no because the tender to the sensing A double failure would be unlikely unless you didn't notice the first drive had failed for instance because it you in a remote location or a locked closof You may not be able to chark the con-

sole frequently. That is why it was critical

A common complaint about PAID year. A common companie about RAID sys team is they are sower than convention ationties, account the source deliver enstantly switching to arrays may onconstantly, swacning to arrays may enment through my found no speed differment, mosga, we tound no speed unter-

> eces a determine Drive arrays aron't nonfred and I still ment sheet present I also want power corus. I aiso want these to be short so Court blo It would also be nice if the it weeks give be the it coffrage and under a stordard management console

such as Newdi's NotWare Management Contain. There is one final point Redundant up revent "inexpensive" disks - aren't Arrevenue to hunch But the cost can be inctified in terms of untime continuity of service ability to maintain systems with former technical staffers and the connect to attended the description of the opposite

By any measure. RAID provides us with a level of stability and reliability we heren't been obte to achieve with expensing mirrored drives. Levened it to contions reliable for a long time seem when it fulls And excepthing falls sometime

for me to select a product that offered Marks is a vice new ident at Lebourn Bouthern In New York

PAID s systems

have given us a

warhouse

TOP RAID IMPROVEMENTS JISERS WALLD LIKE TO SEE

er from the most in the Mari

- Increased canacity denser drives
- 2 I own moral cost increased price
- 3. Improved scalability
- 4. Improved I/O rate
- 5. Easier means to recover lost data
- A. Increased cache buffering 7. Increased Unix compatibility
- B. Easier purchase of individual disks rather than disk blocks
- 9. Less confusing file structure
- 10. Easier installation

automotion leads of souton feets Reluctance on the high end

sponded tepidly at best to RAID. The reason stems in part from the fact that storage pressures are ing as they increase at the PC and LAN level Connection issues between host and RAID subsystems are also more complex at the high end.

systems are also more complex at the light cist, limiting the number of third-party products. For example, the closely guarded patents on Digital mont Com 's DEEL and Cl bases here preed all but a handful of wendors from u

fully creating RAID subsystems for these environ-

In short the mainframe and traditional midrange multiuser sites represent a relatively stagnant market with expensive does. And with the major systems wendors - which have the most al stake in supporting this area - such as IRM show ing little interest in supplying the high end with sigcent RAID technology it is unlikely that others. mill much in

In a recent survey contacted to ed Bata Care (IBC), 165 el nts in AS 400 emiron ted that SUR are similared in t ram subordem purchases — an go over the previous reg.

SLOW GROWTH FOR RAID

It's worse in the maintrane areas, The also of III mistane order ing to employ NATO decreased from 4% in 1992 to 8% in 1993, according to 199



FOR MORE INFORMATION on RAID, contact the RAID **Advisory Board**

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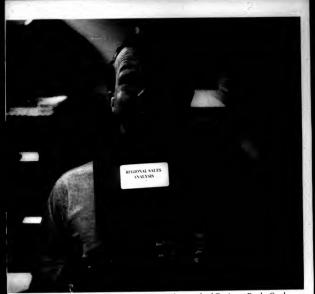


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1 (COMBO DISETTE DEVE D 3" AN 1 25") * LETASCAN 1415 MONITOR [14" CIX, 1024 x 768, 28mm, NI] * CHIEFEY IN KINDOMO - CORRECT TO LITTRE





NAME AND ADDRESS OF THE PARTY O CHANGE TO AN THE WORLD COME TO THE RESCOUL ARREST

MAINFRAMERS

ION CODING TO SMALLER SYSTEMS

transition

t struck Jake Wilson that the hardest thing about his move from the main-

frame to Univ and client/ server worlds was the range of new options - options for such things as user interface design, systems management and hardware configuration.

"In the mainframe world, you don't have as many options - maybe you can adjust parameters in CICS or twook database environments to suit certain situations," says Wilson, a senior advisory systems engineer at GTE Data Services in Temple Terrace, Fls. But it is nothing like the range of things you can do in the Unix world." Like Wilson, there are

serves of mainframers roing through the trauma of transitioning to new development platforms. For many it is a matter of learning new PC. Unix, objectoriented, LAN or client/

server skills - or finding an employer who appreciates the old skills It's hard to avoid making the transition. Ac-

Panepinto is a free-lance technology writer and doctoral atudent in communications at the University of Muscondensations Amborist



cording to Scott Sherer, president of NASPA, the Association for Corporate Computing Technical Professionals, there are about 10,000 organizations with mainframes in the U.S. (each

BY JOH

of which may have more then one main(rame) down from a peak of about 13,000 in 1990

Sherer's commission has seen the shift from mainframes to PCs. Unix maintraines to rea, conse in its membership, which once consisted only of prople with mainframe skills Today almost all members have programming or svatems management duties on piatforms other than the meinframe

For those making the switch attitude and initia tive are all-important, according to managers and etellore

Access to mentors, into amment nationer with per sonnel climbing the learning curve and adequate training have an equally erucial impact on whether

or not a transition is successful. Some companies have helped lessen staff fears that lower productivity or

time away from work for training will leave a mark on their records. These firms have acknowledged such circumstances by adjusting individual's performance goals.

'In most cases, companies have faith that their employees are going to be able to make Mainframers, page 104

Mainframore

CONTINUED FROM PACE 168

this leap, though it certainly is a hig challenge," says Heidi Dix,

search ine in Cambridge Selem on the sterios of these

duration the word mainframers who have freed the sheller and frustrations of making the en to object opionted PC LAN and Unix environments ...



I muss there are some peop who find a niche and are comfratable to store those " Wilson save "I'm not one of those nea

And it's a mod thing too In GTE Data Services' project to dominate a siew of mainframe applications to Univ-haued LANe Wilson has had to wreatle not only with Univ. C and abolt programming but also with what is arguably the most difficult Unix task —systems man-

That's a lot to ask from a suy who has a background in Cobol CICS. IMS and a bost of IBM mainframe applications and

"To take a typical program mer from the mainframe world and make him a programmer in the Unix world. It takes a cer tain amount of training, mentoring and experience to pull off That transition " Wilson save But if you are a solid programmer that transition should not he that difficult? Unless systems and networ

administration set in the way. Wilson was used to working with mainframes, which means having an environment set up for him so be could just sit down and write Cohol code. In the downsized world of PCs, workstations and Unix servers, such things as version control work. on and PC configuration and backup have to be taken into consideration when writing software

Wilson says he believes his experience as an assembly lan-



guage programmer and as a

er building large multinser

systems will help him in his

transition His knowledge of

better feel for the nitty-critty

of computing and enabled him

to learn any third-morestics

language (3GL), such as C.

more easily than someone

moving from a 4GL or another

user mainframe systems, they

center on issues of data inte-

ment in which lots of people are

hitting files at the same time

then you are going to think

about the integrity of the data.

Wilson says, "I would say it is

form you have experience on.

but the type of applications

Even so, he warms, the move

"When you take that step into a new environment, you so back

from mainframes to Unix iso't

to the starting point. Everything

that came easily with a decade

of so of experience is pretty

used to know things off the too

of your head, and now you feel

like you're pulling manuals off

much gone," Wilson says,

without its frustrations

sace 'em buells

not so much an issue of the pist

"If you are used to building

estions in any environ

As for the advantages so. emed by having built multi-

nframe application develor-

Wilson same his management have been supportive throughout his transition by providing training and releasing him from assembler has given him a much day-to-day duties - items formally acknowledged in his job poor immedia and performance and the size has assess to mentors, namely three skilled Unix programmers on his 10-

member learn You have to understand you're going to be frustrated for a tittle while and just accept it " Wilson save "The barder was work to broaden your skills in a new environment, the more oxidely the frustration steer SWIT .

THE manaaer's WITTER WO

> Ron Thompson

her really want to do it, but n't try to force-fit pe III

//hi

transition: DAWN BONEHAM AGE: 31

CH IN NAMEDY FOOD STO TRAPPS FLA.

Dawn Boneham considers her self "a decent problem-solver and a self-taught mainframer. The list of languages and ope sting systems she has learned on the job in her 10 years, going from programmer to syst analyst, reads like the index to an IBM manual on mair programming - Cobol. CICS. IMF IMS, PL/1, JCL, DB2 She is used to picking up

skills on her own and sees le ing as an integral part of what information systems perso do on a day-to-day basis

This attitude has served her well in Kash n' Karry's ongoin trunsition to an object-orien programming environment

Tve spent my whole adult life learning new things and that has belped in the transition, Boneham says. "I'm not one to so through mannals for hours on end. I do better sitting down with someone who knows it bettoe then I do or by playing with

But hofore Bouchem model start playing with building oblest exiented applications in Destitute she had to loom on timely near miles for what arrest title on entirely differ. neemed like an entirely differand management of Kash n' Know bought the company from its parent in 1996. Boneham haland transfer more than 3 mil. les bisses of code from one main tion mice or cook

Letes when the company de Later, when the company deand flat-file applications to an Informix relational database named system on Univ she nieked on her first nonmainsare proxect to

To Roneham, that change in skill note was not year dramatic After all, "SOL is SOL even if the syntax may be a tad different." -----

Univ was a hit barder in learn but only because the commands many foreign and at times ambiguous. For example, the meaning of "-e" in Univ mea obsage from command to command entering "lo .e" gives a list of all hidden files: entering "ne -e" gives a list of all process on commed by other possile Even with such quirks, learn

ing Unix did not mean Boucham had to pick up an entirely new way of thinking about comput-Object-exicuted program

ming did "In any kind of procedural language you are breaking deem workflow and coding it Boneham says. "In object-oriented design, you're breaking down events and assigning responsibilities to objects and no really dealing with workflow

in some ways, thinking in terms of procedural language is unnatural - von are trying to manipulate the world into procedures by separating the data from what is happening to that data, she says. In object-oriented programming, you must think in terms of events and must design applications in an antisals different was

For example, in building an phiect that will store prices, the programmer has to make a design decision about where to put the responsibility for calculat ing effective dates - in the ob ject or in the application or con troller objects. (Some objects deal directly with date, while others are at a meta level deal ing with an object's behavior.) The initial decision about how banges are made will affect developers halld objects Mainframers, page 107

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 - Industry Competition
- Industry Competition
 Didital Media Competence

140-215	250-216	270-438 .2	400-440
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Mainframers

CONTINUED FROM PAGE 104

casion.

"Where you place your methods and data in object-oriented programming is very important," Boneham says. "Frogle who haven't got a lot of experience in regular mainframe programming may have an advantage in picking up object-oriented [programming] because they don't have anything

Homework

Boneham did several things to get into the object-oriented mind-set, including reading books such as Donald Norman's The Devign of Everyday, Things (Boubbeday), Gary Entsminger's The Two of Objects (M&T Books) and Timothy Budd's An Introduction to Object-oriented Program-

wing (Addison-Wesley).

Boneham also subscribed to Usanet news groups such as comp object oriented programming can post questions or simply commiserate about problems they are having in the trans-

sition.

Also, and perbaps most importantly for Bonebam, she sat at the elbow of a colleague skilled in object-oriented design empty shance she mi

"I found the level of frustration got so bigh so fast because the way I had always approached problem-solving no louger worked," Boncham says. "I we didn't have someour around who knew this a lot better than I did and was willing to talk. I wouldn't have made it

even this far."

manager's

Denise Matthys

MANAGER

Dawn Bonoham's boss says she believes the change in mind-set from mainframe to object-orient-

On the wall of her office, Denise Matthys, systems development manager, has a poster from her daughter's first-grade class that is supposed to teach about

transition

TRAINING

Cost to train a control IS person to learn a new infrastructure: \$35,000 to \$50,000 Cost to train a developer to work on: \$25,000 to \$40,000

TIME

· Weeks of class time for each central IS person: Approximately 10

- Weeks of class time for each developer in the line of business: 5

Months of reduced productivity for each central IS person: 4+
 Months of reduced analysis for each developer in the line of business: 2.

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pact of object-erionted programming, At the top of the poster are bouse with different classifications such as "pact." Along the bottom are pictures of various objects, including dogs and cats. A point of the game is to put the object from the bottom into the correct classification based on the subject from the bottom into the correct classification based on the

functions.

"Classification is something we berned long ago and do so naturally, yet programmers often forget about objects and classifications and think only in terms of data-in and data-out," Matthys.

tagan ention

transition:

GALLAGHER

ACE 29

PROCEAMINE VALUET

ANCIONA DEPARTMENT

If Jares Gallagher could do it all over again, she would probably approach the transition from a mainframe environment to elient/server in an entirely dif-

ferent way.
"This process may have been less frustrating if I had learned

about the complexities of client/ server before I started playing with some of the GUI tools and got all scotled, "Gallagher says. Learning to code prototype graphical user interface GUI), accrease in Microsoft Corpix, PowerBuilder was easy enough to pick up from inasualth, inaring where GUIs and FC applications it into a newly downstrat client/server environment.

proved to be a lot tougher.

"We were playing with an evaluation copy of PowerPuilder and I thought, VoK. cook. I'm going to be building applications next week," Gallagher says. "Then, after we took a clienticerverlans. Exame It was elienticerverlans. Exame It was

going to be a long while before I built any applications." Gallagher has more than 10 years' experience in Cobol and JCL programming on mainframes and was brought into the

frames and was brought into the client/sever project bectors she had experience using KnowledgeWare, a mainframe compoter-aided software engineering tool from Pittus finstruments, inc. Using the tool, Quilagher tool a business-area analysis of the Department of Transportation's field offices and built a process model, a data model and the data flow disgrams for the client/sever sysgrams for the client/sever sys-

After finishing the design work, Gallagher expressed interest in getting involved in the actual coding of the new system. That curiosity and the desire of

the of business: 2

landed her smack in the middle of a mainframe-to-client/nerverchangeover.

The infrastructure, which is in process, will eventually include 32 Novell, Inc. LAN Manager LANs, 450 ebent PCs and Microssoft Windows NT servers on

crosoft Windows NT servers on a statewide Tt backbone. A two-day client/server class at Midak University in Phoenix drove home the complexities involved in transitioning a comnuter system from maintrance

to client/server.

When you're working on a mainframe computer, you don't think about the operating system or platform, you just jump in and start writing Cobol. "Gallagher sayx." My boss and I kind of walked out of there and just sarred at each other. We work

pretty shocked."

Languager got a second shock after alse took a form-day closs after alse took a form-day closs on Power-Bisiders at Midda. Gallagher had took all thought closely server development in Power-Builder would almpy be a mis-ter of drawing servens and erasting iones. Who ht. It involved some concepts foreign to bet; localing the side of taber-lines, the need to solicit developer and more reochastic in putting longing or and the side of the development of the side of the side

ing betton styles, colors, pop-up

vs. pull-down means) and the

need to learn C to build applica-

"I found out there was a lot to that tool, too, and walked out of there feeting overwhelmed."

Luckily for Gallagher, her department is learning right along with her and is committed to training in-house people instend of looking elsewhere for already decycloped tallent.

Despite the daunting challenges of client/server, Gallagh er is giad to get out of the data center and work more closely

"When I was a Cobol programmer, I would just get the speca and not really see the user until I was almost done," Gallagher says. "With this I am going to get out and find out what the users really svant."

manager'.

Harvey

Jaros Gallagher's manager says she believes people who will be successful in the transition from mainframe to client/server are those who can see past the immo-

"To make a successful transition, you have to be activemely conries and extremely confident that what you eventually turn out will be good, even when it seems you're in way over your head, any Bill blavey, electronic data processing project leader. Good support management support to be form of potience and semeried from everyday duties, abo

she says.

For example, for development
staff members like Gallagher,
learning new skills is a primary
responsibility in the coming year
a fact reflected in their performance reviews and management

helps the process en

"We were going to do it on a consultant basis but agreed we should take a little longer so we would have the skill sets in-

UPCOMING

See next week's Management section for a look at the managerial issues that suscettives must tackle when information systems staffers move to object

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Object-oriented systems nose new challenges as well as opportunities for database administrators

Dr. Don Bretone

BJECT-ORIENTED SYSTEMS will change your life - espe cially if you're a database administrator

As these systems come closer to the fore, database administrators will experiegee changes in their daily routines. and more important, see new opportuniting unfold

While some experts say true object systems are not meant for the mainstreet market combers are strought Those responsible for safeguarding and distribution information might need to add object management to the mix. In this capacity, an understanding of the obiect layer and the internal database structure will be required

Unlike traditional systems, which coosist of a detabase and a collection of programs, object-oriented systems are built ground a database and an phiest layer - that is, they couple the data and the newgrams that manipulate it. Like traditional avetome they encapeulate data nine feather and engeneralists the behavi

iors of the objects

rs of the objects.

It is the object administrator's job to manage these objects. Generally this inminage these objects, ocurring this isnance of object methods (code sninnets that groups an object to behavior and nerfinal govern an object a nemasion of interferen to objects and management of distribut-

and adviced exertence The domina effect

Object management is the chiert adminintentor's exectent challenge. It involves tracking the object class hierarchy and providing impact analysis for any data or. behavior changes Administrators must buggethe leastion name function inheritance and polymorphism of every beharior stand within phinate

The difficulty arises when a method is altered. Just ay changes to a data item may affect many programs, changes to a method may affect tower-level classes When a change is made to a high-level class (called a base class), an administeston must check all towardevel methode to make sure they properly inherit the shaneed mathed

Administrators must also regularly document the methods estrangulated in each object and the messages (trimers that fine off the methods in an annives. tion) sent to each object. This road map.

which is similar to the entity relationship model need for traditional exytems lets

and and the state of the state of the state of add distributed object databases which manage communications among many databases and you have a lot of extra responsibilities. The administrator must manage the Object Request Broker. the central software component of the Common Object Request Broker Architesture (CORRA) The CORRA standard has been adopted by most large vendors and strangantose that all chierts restard. and accorded object unabout Doorly do and careins topics management bear flow this than their mistional constarments because of the rimmus class hierarchy and data relationship definitions. Unlike mistigned implementations there is no

each thing as and box many arteinst object databases unless the access nath has Gazanasce Ginese the mecons Eventuelly as norm object-oriented databases become robust enough to sun next mission-critical applications com port mission-critical applications, com-

Cetting from here to Object administration is very different there

less of home database, communicate in a standard way To be successful object administraiors most understand the internals of a database engine, even if an object-oriented detabase is not used. In many cases developers build object lavers, usually in

Cas or Smalltalk and interface them to a traditional relational database. Profiricory in the programming language used by the object layer is also required. The success of an object-oriented system also depends on thorough planning

ton of relationals to a nurse object orient rd approach. When that happens, the ob lost administrator will assume full responsibility for the entire object architecture and the database administrator's role as we know it will become



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--professionals ana finding neonle who have the skills they need and are willing to chanc



Struggling to imple ment a new technolom? Learning a Antitonging new skill? If so don't on it alone Sue.

round yourself with exports - forfree Wish technical hudgets on tight right now way had to find new ways to solve problems," says Joanna Morgan, director of cornerate information systems at Cooper Industries in Mounton

Rather than half technology advancemontantilhudentehouncehack many fS managers are networking with other nier to exchange information

meone has already solved 80% of the finformation technology] problems out there," says Christine Stormont, director of systems development at a Boston financial firm "Books want to note

anoblome on their own but I don't have the nationer or the time Recently Moreon whose training had-

two years mad a collegate of a profestwo years, met a concentre at a procesdifferent industries the IS directors discovered their cornorate LANs are similor They each run Novell Inc Marthage over Token Ring and have a corporate

population of about 400 I think up on bonefit by setting to mather to exchange ideas." Moreon acre betweened in what the other company has done in terms of an tomated software distribution. Monmo is arranging an indistribution, Morgan is arranging an in-formal funch so the two staffs can identifutonian of materal interest

Let the wander do the walking Jim Murdork, a research consultant at Venner National Insurance in Chicago Nemper National Insurance in Cincago

als working with Lotes Development Corn.'s Notes under OS.9 "I was having trouble cetting the prod-I was naving trouble genting the procdock says "When you reach a problem. the conflability of classes are limited but Lotus may me names of companies in my

As it turns out, one of the contacts saved him nearly two days' work. "He offored to take a fook at my CONFIG.SYS files and [initialization] files," Murdock says. "We exchanged files via fax and ment some time on the above " Refere long Murdock's problem was solved and his 800 users could use Notes over the

and the sale Murdock says this "available" attitude is most prevalent in companies using the fringe are very willing to help hecame ther'm had to fight the same helties "he says.

"It amazes me that recode don't incl pick up the phone and ask for help," says Stormost who often calls people who



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t more time concuming but noughly honeficial networking approach is build ing your own special interpet groun

With a group you can been an to date on technology and share consciences on tectmology and snare experiences Robe manager of American National Can Co is information system in Chicago Leet year the company

installed WordPerfeet Corn 's Common S 1 for nearly (000 waste "It was important to ent if un and running quickly." Rahn says, "Our second enal was to ent the fax

Once those steps were secompl the company wanted to know how to use a Massage Handling Service materials to access outside mail systems, so Ruhn deaccess outside mail systems, so rusin despecial interest group. He advertised through the WordPerfect user group. normalistic obtained names from his upp. dor representative and invited anyon interested to a kickoff mosting at his of-

So for Rahn's company has hosted three on-site meetings. Tve already enthered purist advice from other ron perserved discret advice from other com-

Man Change IS managers recommend keeping this

type of venture simple. "Move slowly and don't overcommit," says Stormont. whose commany is actively promoting a regional user group for a boman re nources nackage. "We made a decision to take it one month at a time If it doesn't work out, it will die on its own."

Hart to a free-lance writer in San Jose, Calif.









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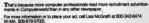
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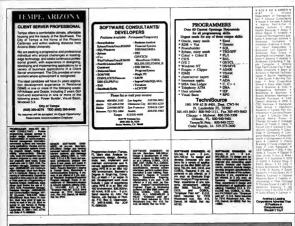
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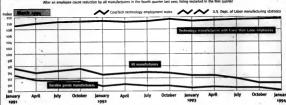


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Scott Maisey, a programmer at AIA Services, a Fpliatelophic based food service company, need Fix Zip to compress files that must be copied to a floopy for transier to another system. Fix Zipis decompresses them. Makiny says these products belp sare time and avoid confusion. "Without this, you have to use a few did and teep track of which like you copied and teep track of which like you copied

Rolational database management and application development system Alpha Software Corp., Burlington, Mass.

Totila Grandbergs, a programmer for Gahreston County in Texas, uses Alpha Four to set up fields, edit data entries and build data forms when using bottleaff offisses (III. Grandbergs says he likes Alpha Four because it is fast. "I you don't have to do complete data." In spill county of the count

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Roy Tollison, a programmer for the city of Fampa, Texas, uses VPIX to do Cobol development, documentation, editing and coding at the DOS level. It completes the program, provides a mattime pulse to the program, provides a mattime provides and the provides and the provides are the provides and the provides are the provides and the provides are the provides and it invokes the editor. When I say 'compile,' it finishes up and moves it over totally.' Tollison away.

Documentation and crossreference software Hawkeye Information Systems Fort Collins, Colo. (303) 498-900

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Mark Kordys, a programmer at Schill

man a norty, a programmer & comman Transportation Services in Remington, Ill., uses Pathfinder for the AS-400 to source field. It rids him of the task of remembering every instance of a particular source field and saves time. "If you're tooking in accounts payable for a date and you have 100 programs, it can save, you about five or its hours," he says.

Programming utilities Mortoce Kern Systems, Inc. Westerloop, Ontario (519) 884-2251

Mark Zudeck, a contract software engineer, says his favorite utility in the rerealized Regular Expression Preceding Regular Expression Pre-CORET in the Interpretation of the Contract of the Interpretation of Interpretation of the Interpretation of Interpretation of the Interpretation of Interpretation of the Interpretatio



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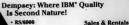
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Friday Stock Ticker



1993 IPOs faring well

If you bought into Cambridge Technology Partners' (CATP) initial public offering (IPO) last year, give yourself a nat on the back. If you bought Equinox Systems, Inc.'s (EQNX) IPO, make it a swift kick in the keister.

To date. Cambridge Technology Partners toos last year's 54 information technology IPOs in performance (as of last ou information technology if the in personalitie (as of hist Wednesday's close). Fortings brings up the rear having lost

nearly two-thirds of its initial share value. Cambridge Technology Partners is in the process of making a accordary offering.

Of the 54 new stocks, 42 are currently trading at or above their IPO share price, while 12 stocks are down. The average rise for the entire group is 41%; 24 companies on the list outperformed that average

Only IPOs valued at \$10 million or more are included - Derek Stater



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